A330 RR Trent 700
TECHNICAL TRAINING MANUAL
GENERAL FAMILIARIZATION COURSE - T4
GENERAL LEVEL 1

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GENERAL LEVEL 1

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GCL13151 - G43T4M0

00 LR FAMILY PRESENTATION (1)

AIRBUS MANUFACTURING OPERATIONS IN EUROPE

Airbus manufacturing takes place in different sites in Europe and is managed by Airbus.

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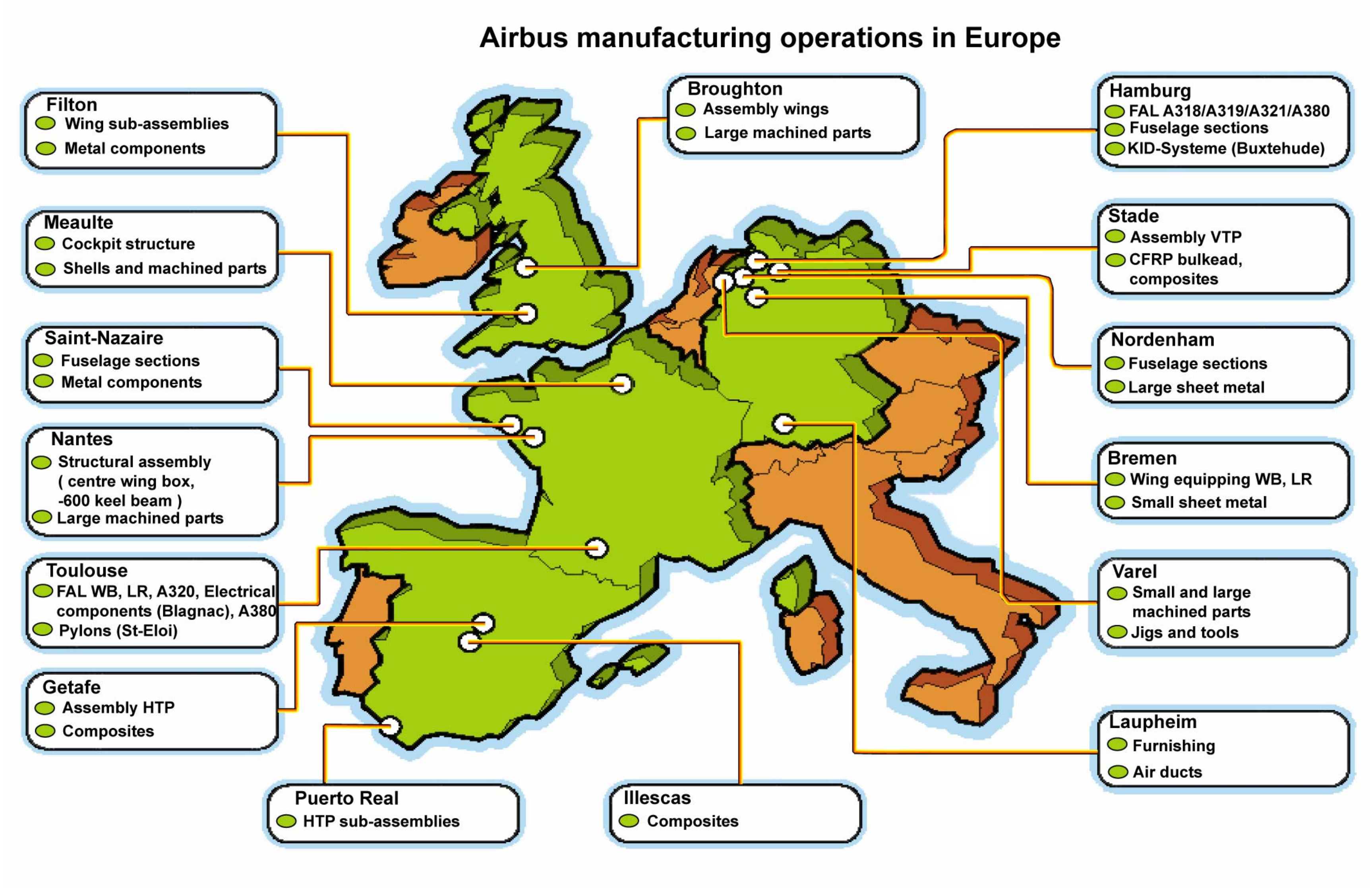


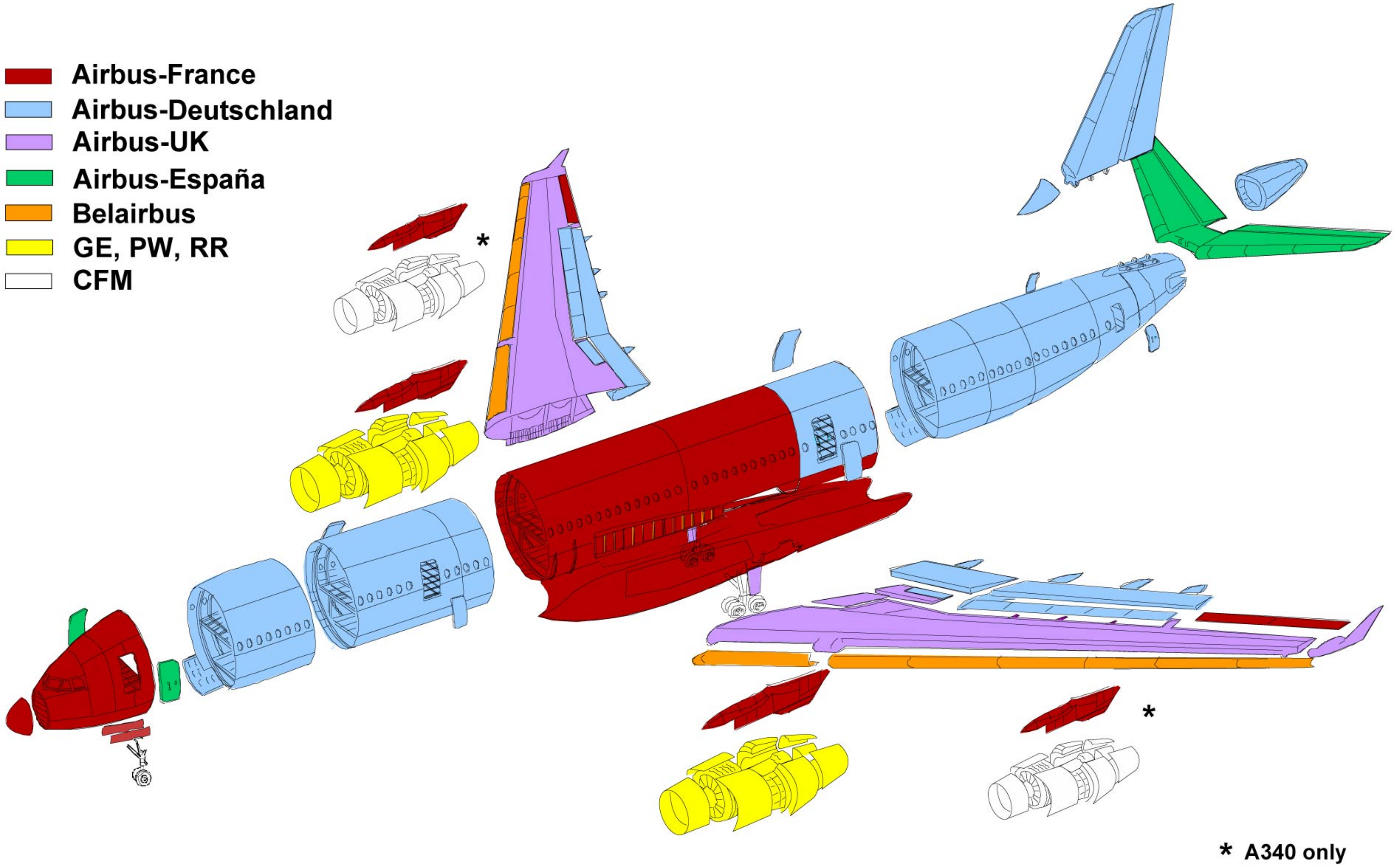
AIRBUS MANUFACTURING OPERATIONS IN EUROPE

00 LR FAMILY PRESENTATION (1)

AIRBUS MANUFACTURING OPERATIONS IN EUROPE (continued)

A330-200/300 - A340-300 PRODUCTION SHARING

The manufacturing is a Trans-national process, structured around key manufacturing units; each unit is responsible for producing a complete section of the aircraft.



A330-200/300 - A340-300 Production Sharing

AIRBUS MANUFACTURING OPERATIONS IN EUROPE - A330-200/300 - A340-300 PRODUCTION SHARING

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00 LR FAMILY PRESENTATION (1)

AIRBUS MANUFACTURING OPERATIONS IN EUROPE (continued)

AIRCRAFT VIDEO PRESENTATION

The A340 and A330 use the same assembly line since most of the A/C systems are similar.

A340-500/600 PRODUCTION SHARING

At the difference of the A330/A340-200/300, only Rolls Royce manufactures the engines of the A340-500/600.
Hurel-Hispano produces the nacelles of the engines. And all the section 15/21 upper shells are made by airbus - France.

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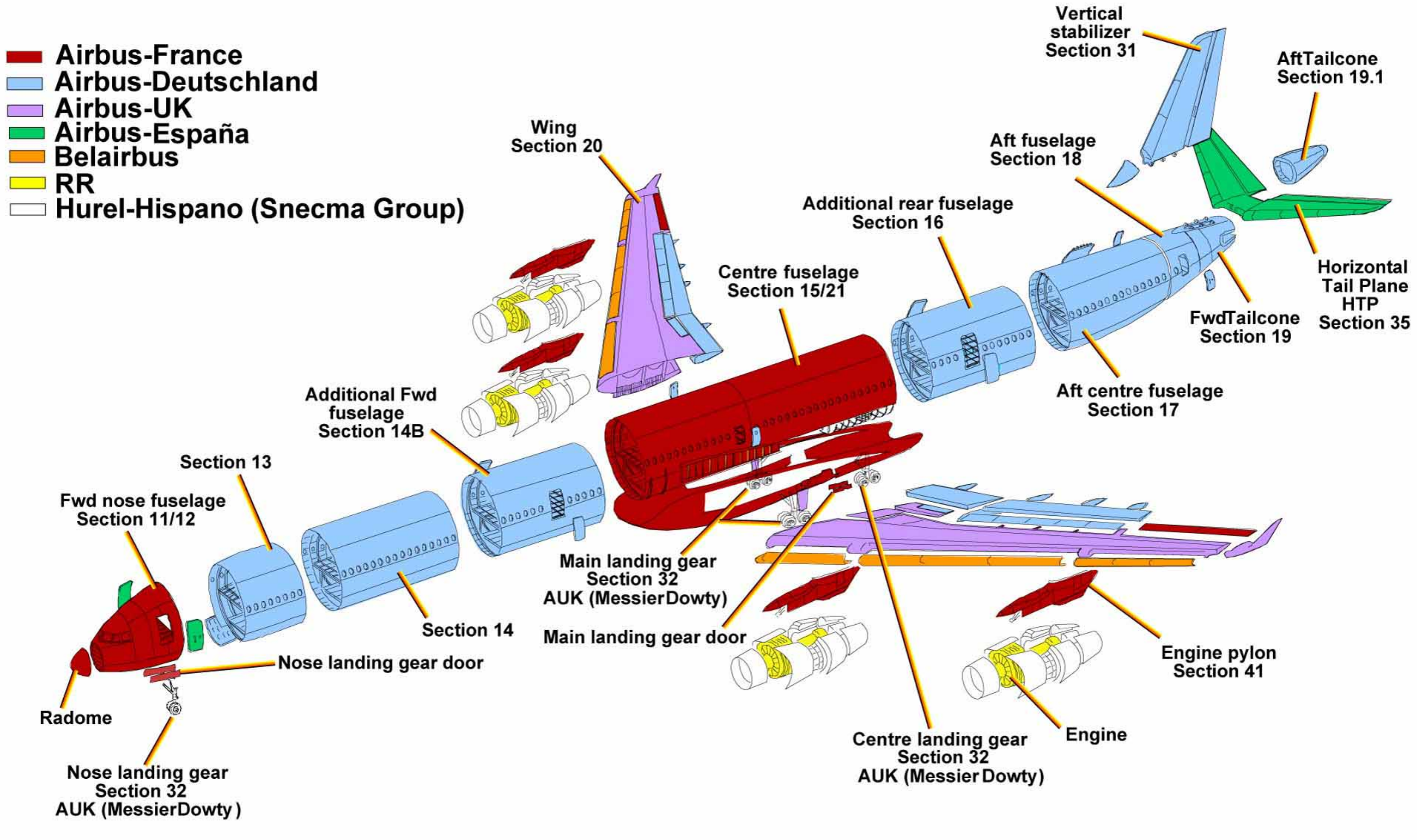

A340-500/600 Production Sharing

AIRBUS MANUFACTURING OPERATIONS IN EUROPE - AIRCRAFT VIDEO PRESENTATION & A340-500/600 PRODUCTION SHARING

00 LR FAMILY PRESENTATION (1)

ASSEMBLY PROCESS OF AN AIRCRAFT

The Airbus Super Transporter, A300-600ST, transports the different aircraft sections of all A330/A340 versions to the final assembly lines in Toulouse.

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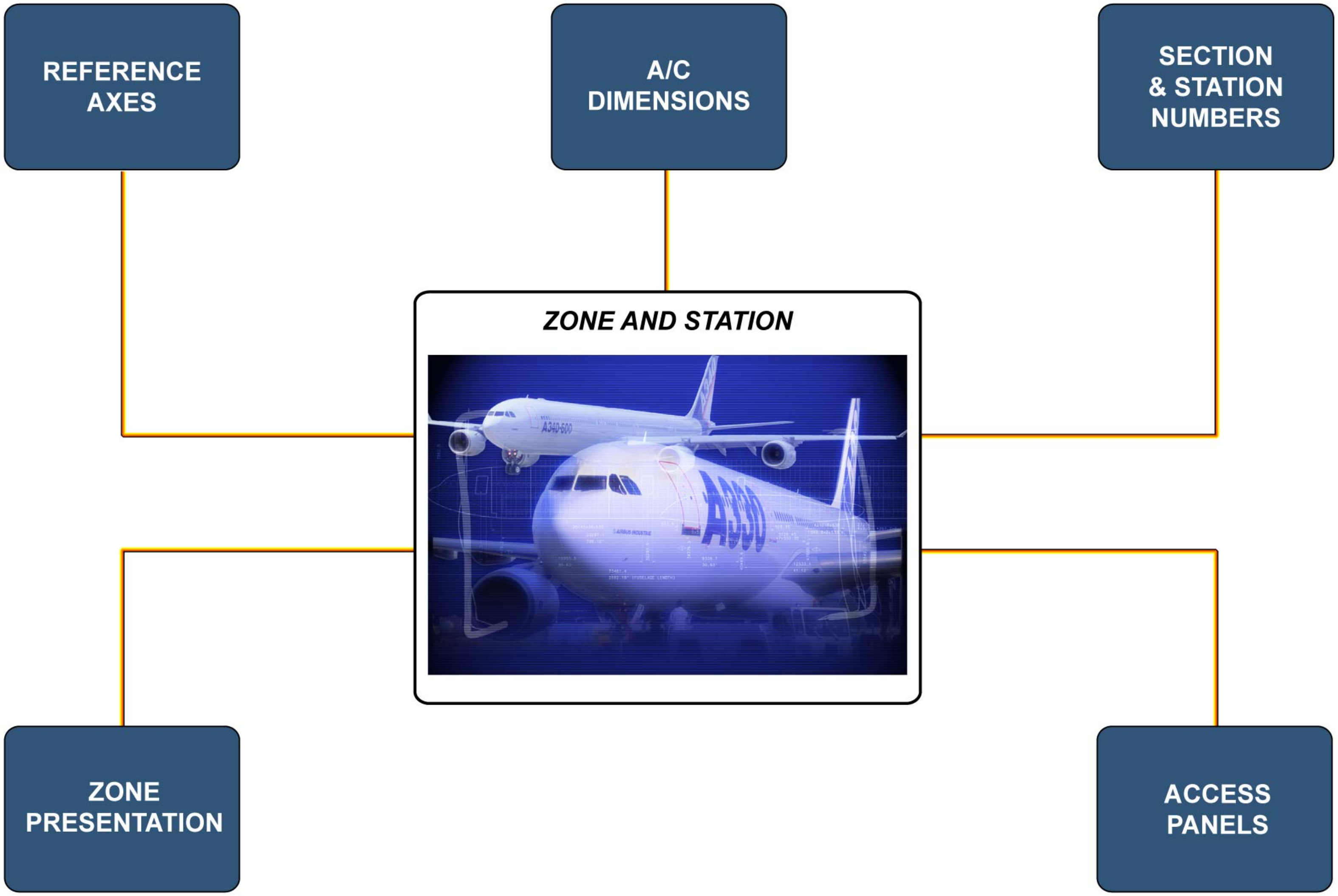
00 ZONE AND STATION PRESENTATION (1)

GENERAL

The A/C general information presentation is divided into:
- the reference axes,
- the A/C dimensions,
- the section and station numbers,
- the zone presentation,
- the access panels.



GENERAL

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00 ZONE AND STATION PRESENTATION (1)

REFERENCE AXES

The structure elements are identified according to the following reference axes. The reference (station 0) for all structural measurements in the X-axis are installed FWD of the A/C nose. These are the major A/C reference axes.

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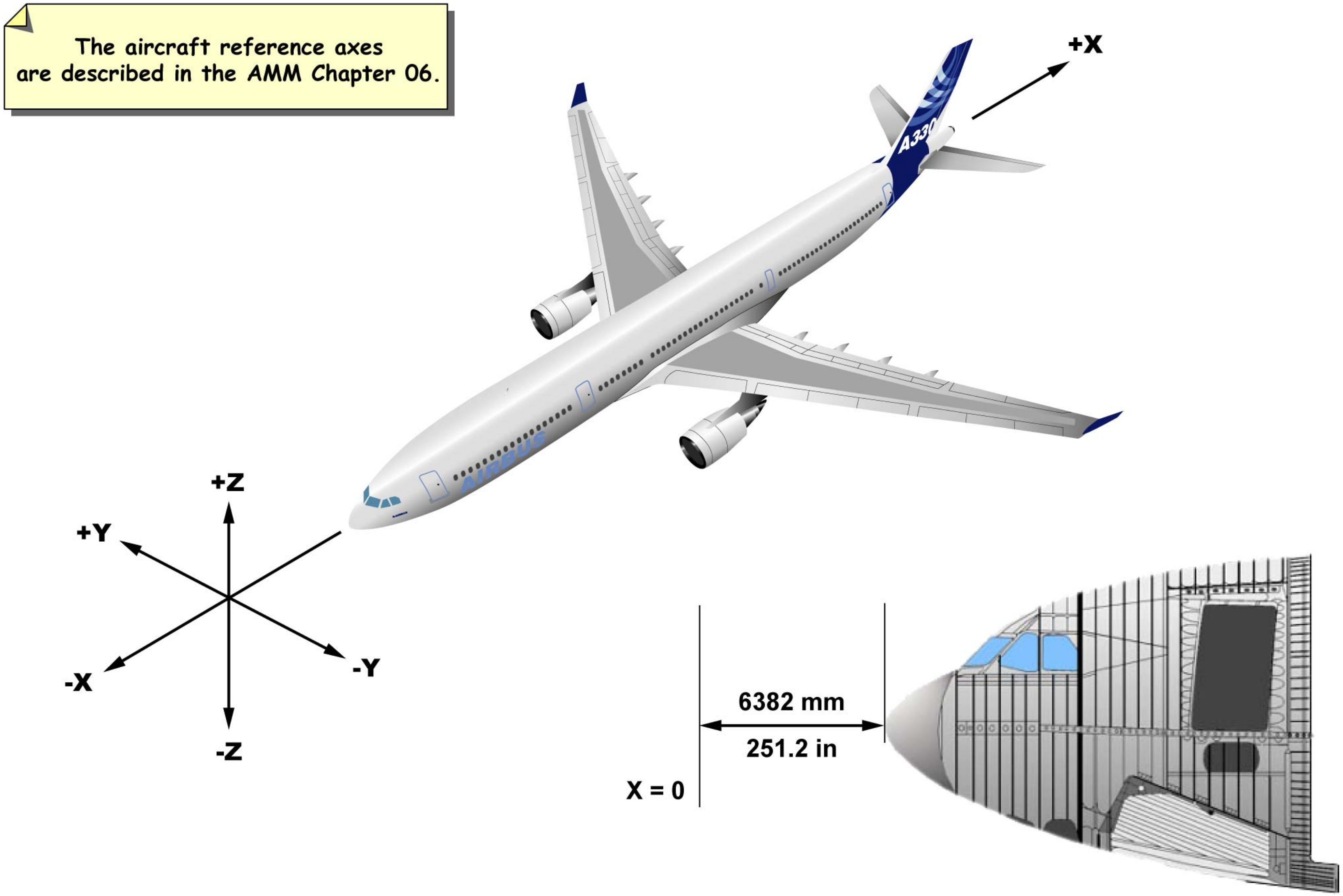

REFERENCE AXES

00 ZONE AND STATION PRESENTATION (1)

A/C DIMENSIONS

The dimensions are quoted in meters, in feet and in inches. Those dimensions measured from the static ground line are related to the A/C maximum weight.

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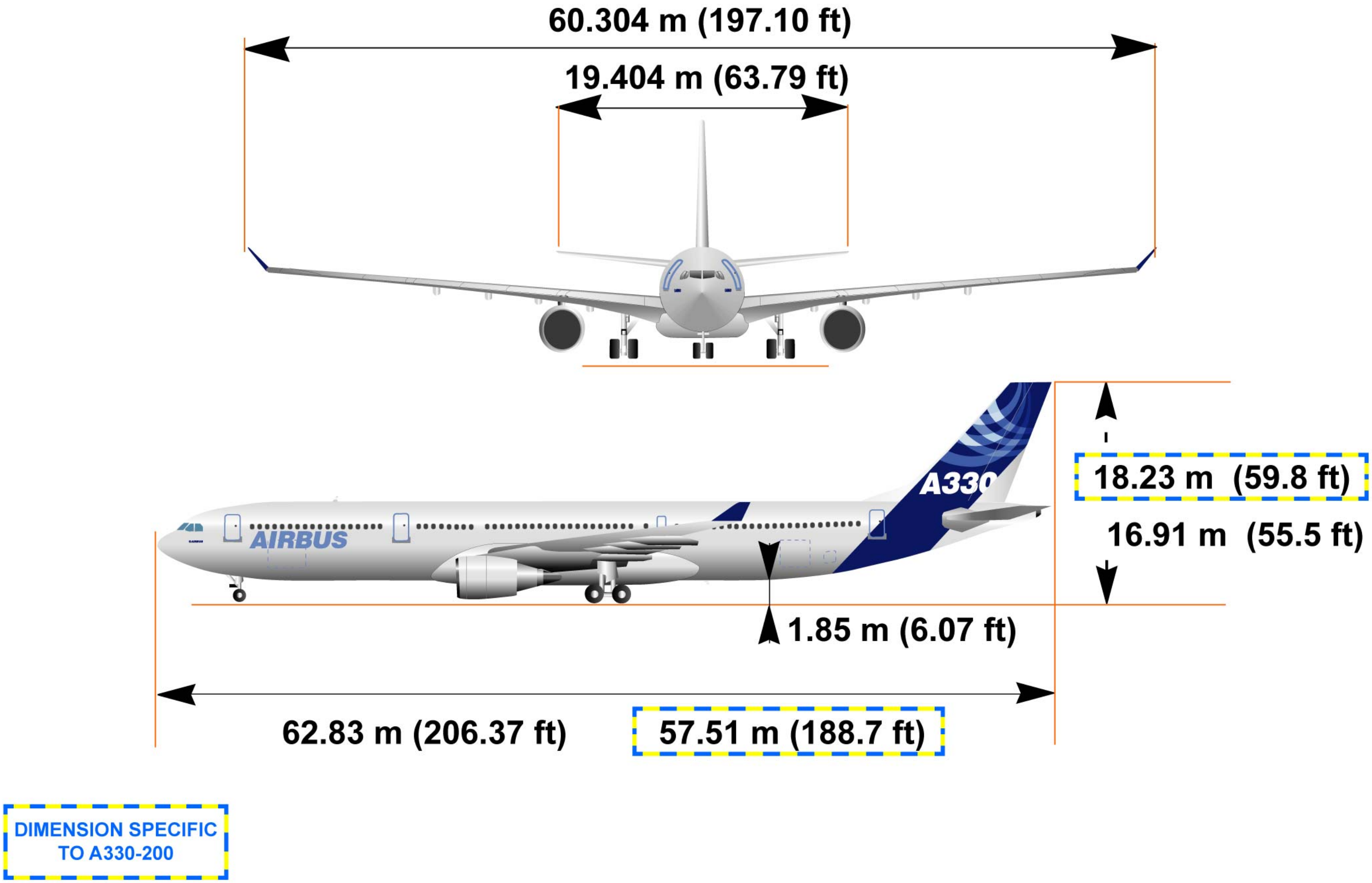

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A/C DIMENSIONS

00 ZONE AND STATION PRESENTATION (1)

SECTION AND STATION NUMBERS

Each major part of the A/C, related to the production sharing, receives a section number. Here the fuselage sections are shown. The station number is the distance in centimeters of a cross section from a reference point.
Here are the fuselage station numbers, which are the section boundaries.
Here are the station numbers for the major areas of the A/C (the nacelles 1 and 2 stations).
Here are the station and rib numbers for the horizontal stabilizer.
Here are the station and rib numbers for the wing.
Here are the station and rib numbers for the vertical stabilizer.

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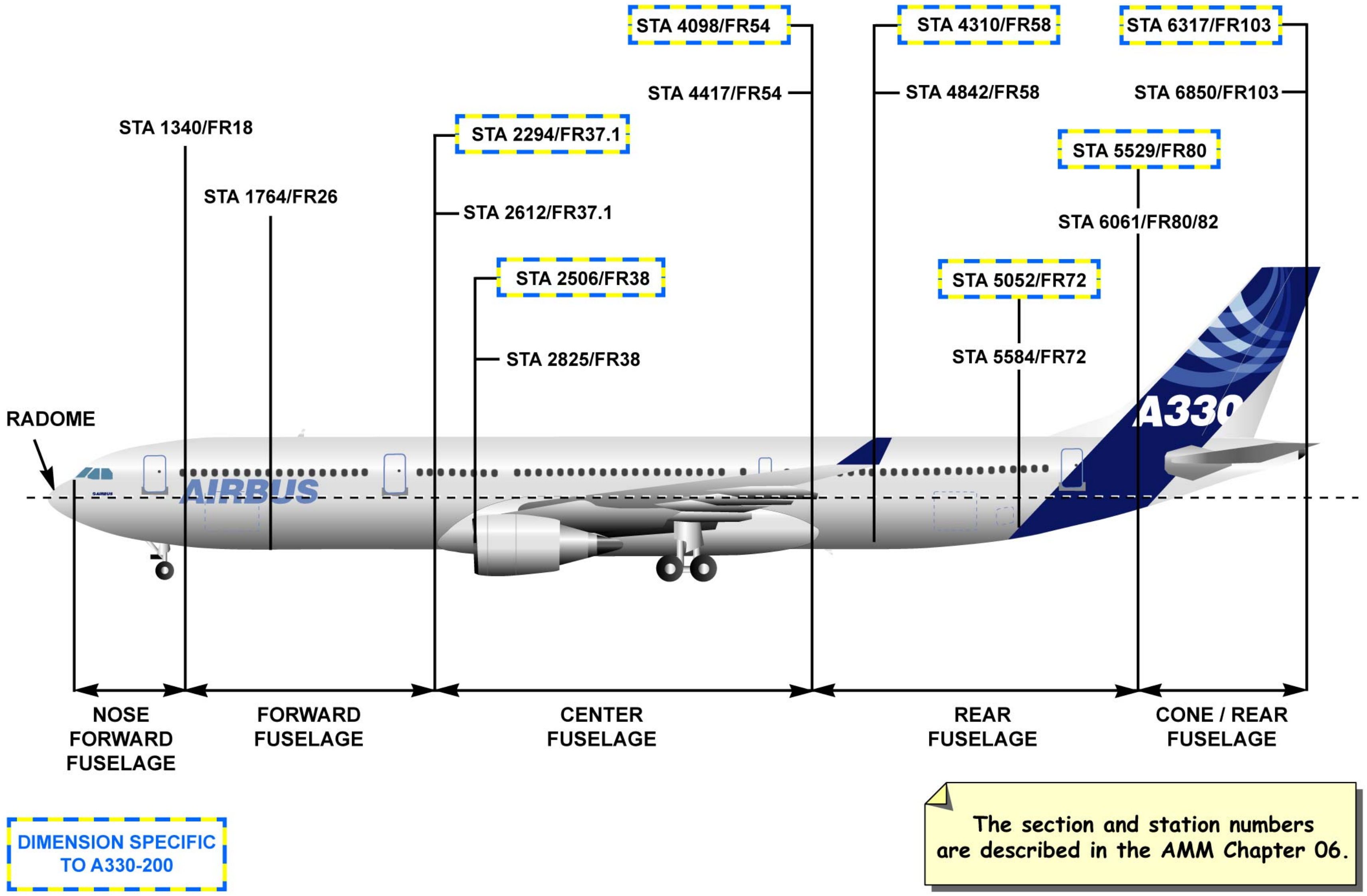
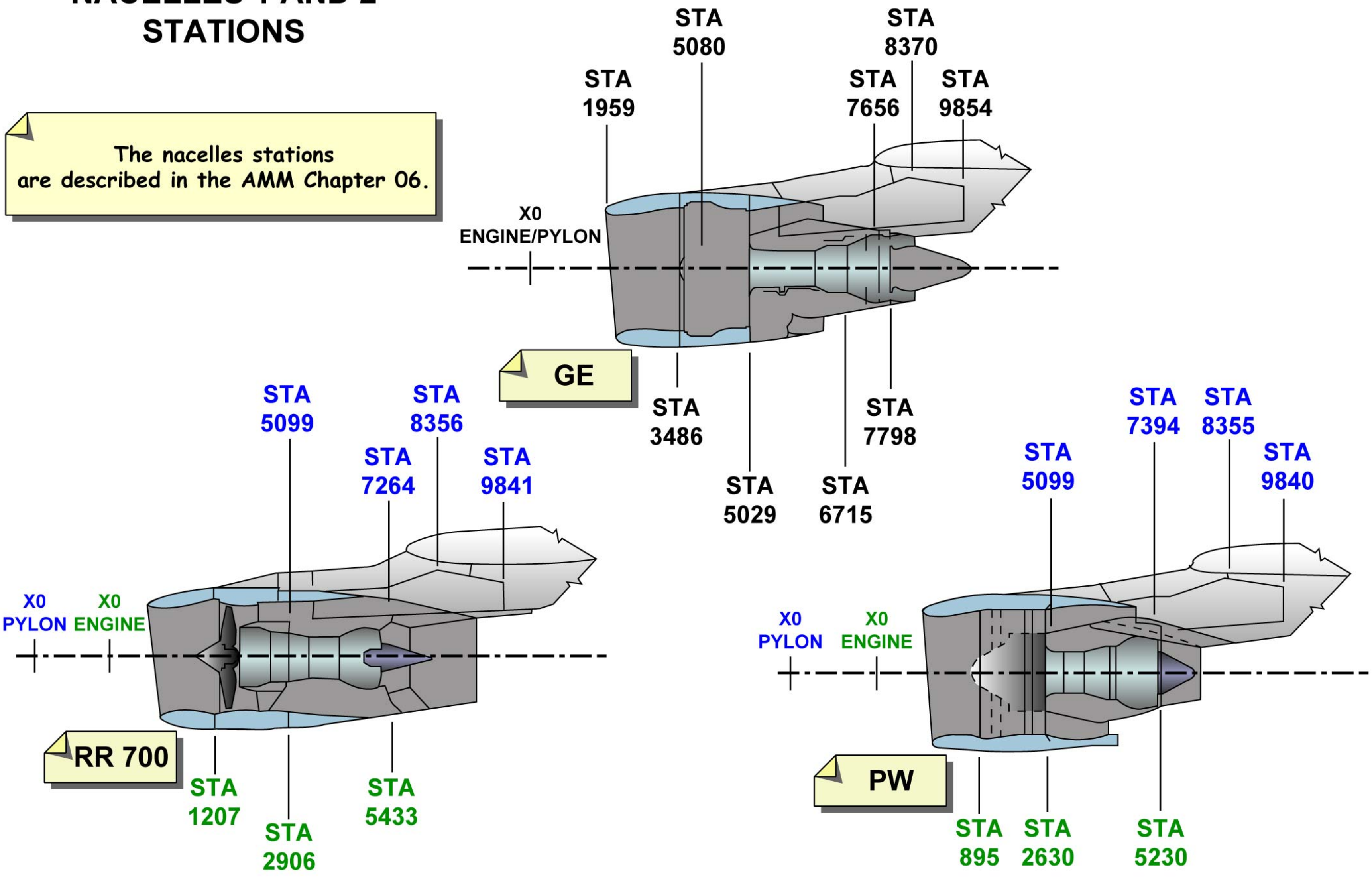


SECTION AND STATION NUMBERS

NACELLES 1 AND 2 STATIONS



SECTION AND STATION NUMBERS

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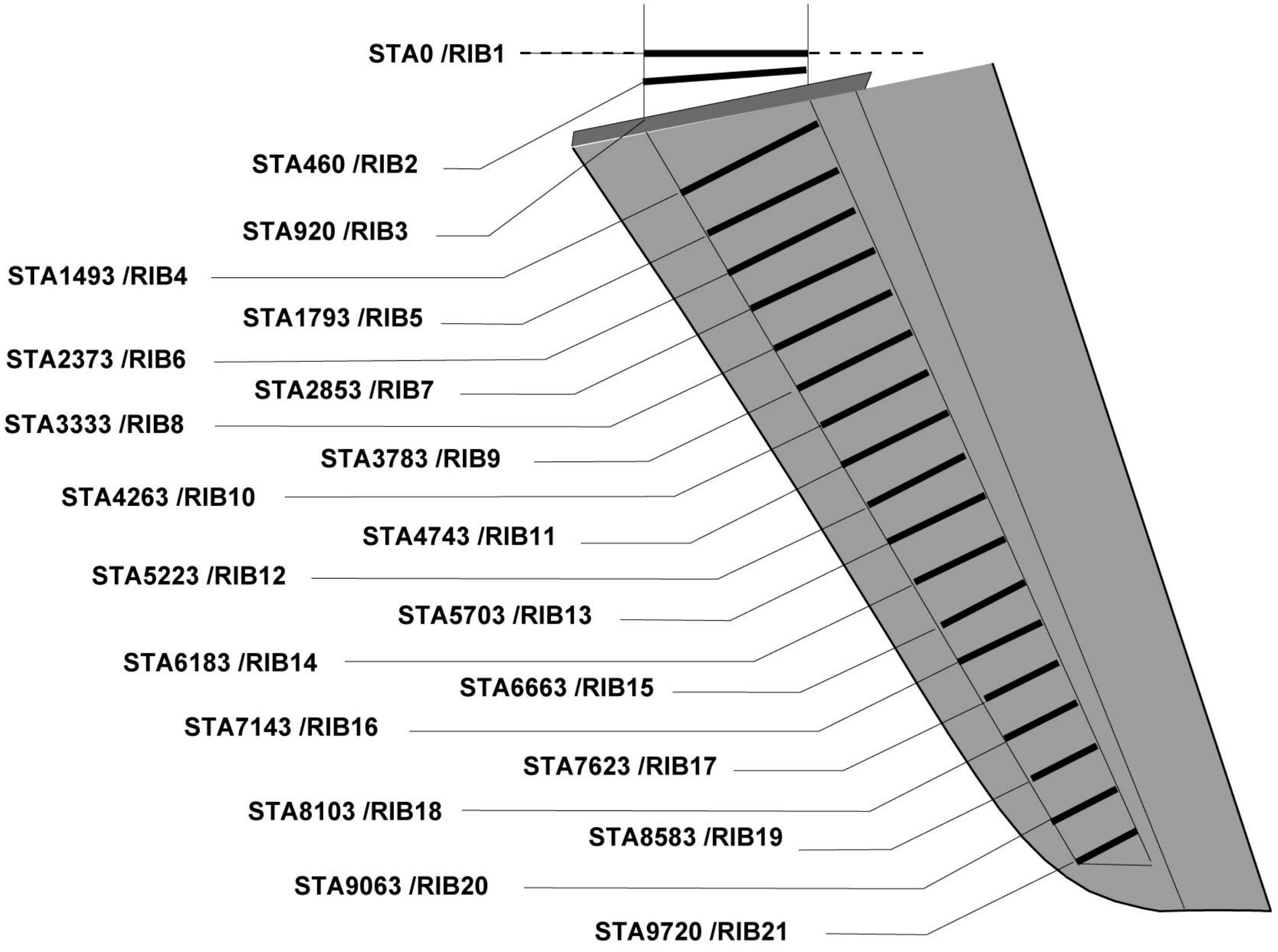

SECTION AND STATION NUMBERS

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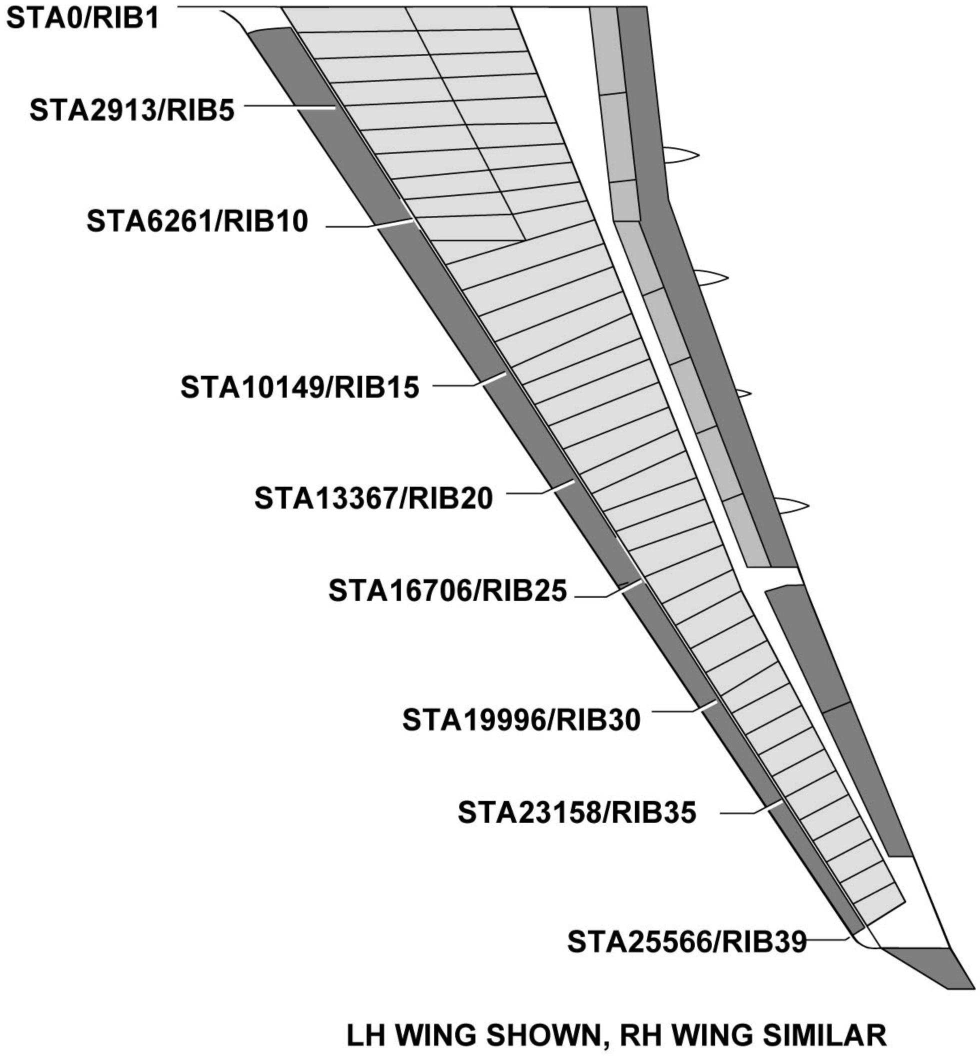
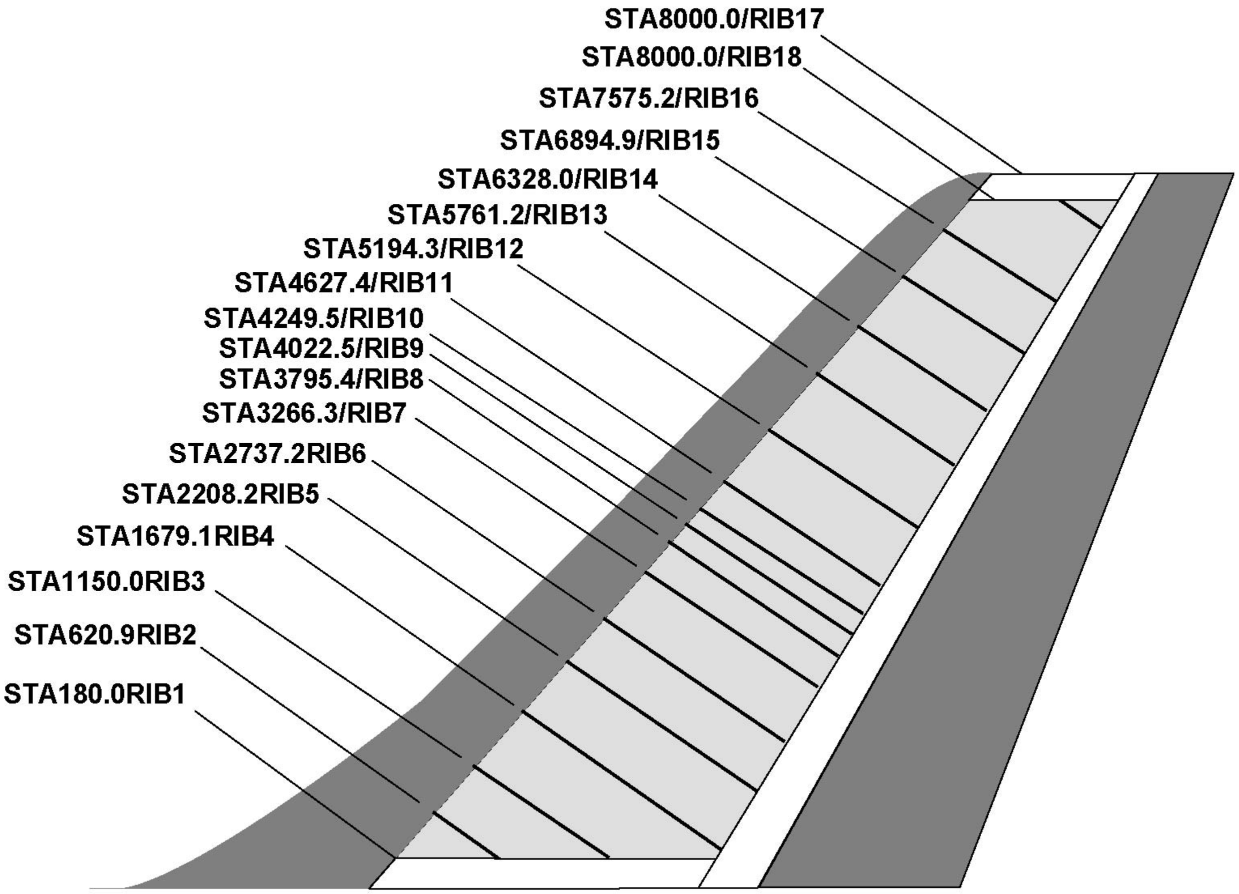


SECTION AND STATION NUMBERS



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SECTION AND STATION NUMBERS

00 ZONE AND STATION PRESENTATION (1)

ZONE PRESENTATION

The A/C is divided into zones in order to make easy the maintenance and the component location. Each area is identified by major zones (hundreds).
The A/C is divided into 8 major zones:
- 100: Lower Fuselage,
- 200: Upper Fuselage,
- 300: Stabilizers,
- 400: Nacelles/Pylons,
- 500: Left Wing,
- 600: Right Wing,
- 700: Landing Gear,
- 800: Doors.

ATA 05 of the AMM lists the zonal inspection requirements for the A/C.
The major zones are divided into sub-zones, which are further divided into zones. An example of the engines zoning is shown in the diagram.

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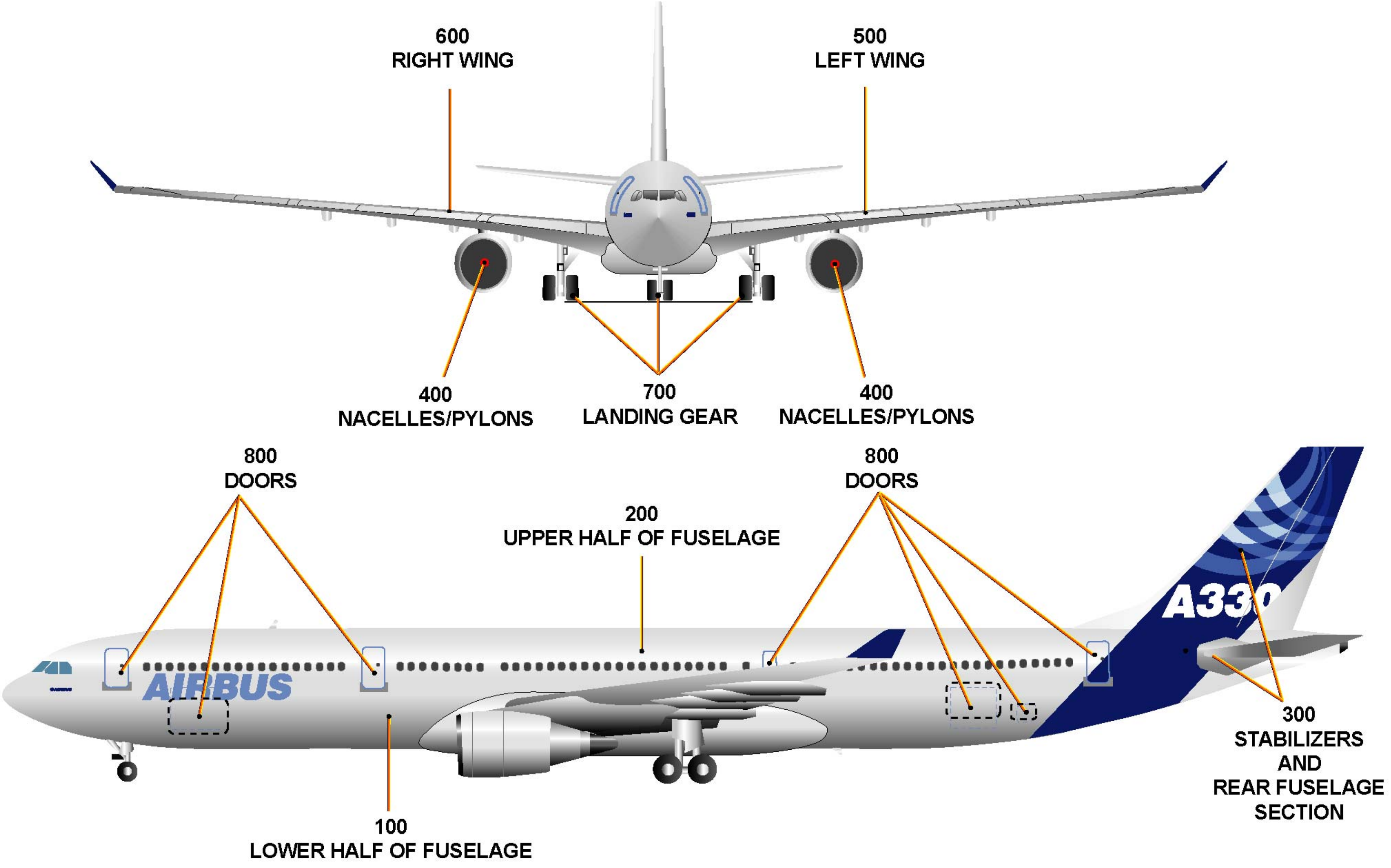
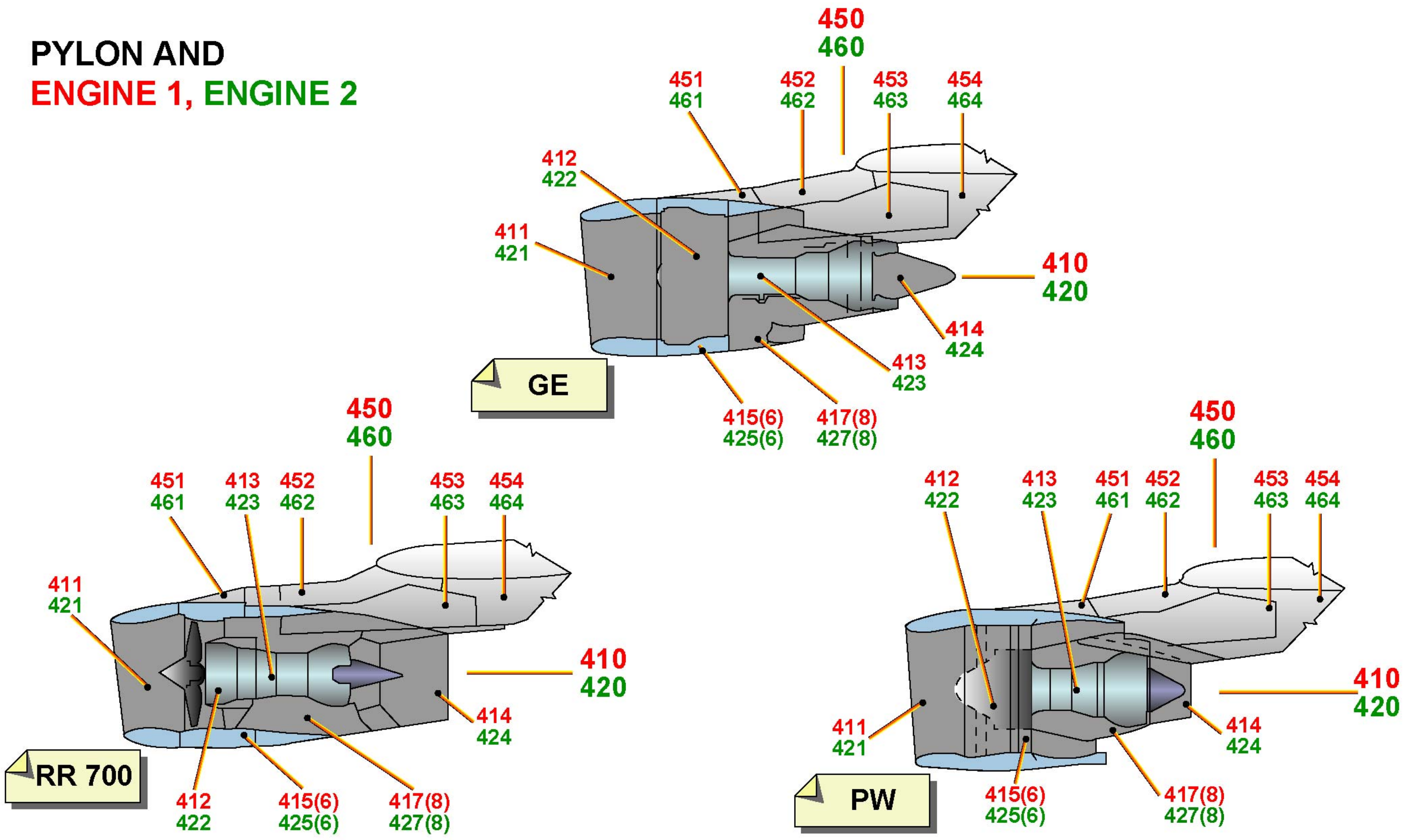


ZONE PRESENTATION

GCL13151 - G43T4M0 - FM05P2000000003



ZONE PRESENTATION

GCL13151 - G43T4M0 - FM05P2000000003

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00 ZONE AND STATION PRESENTATION (1)

ACCESS PANELS

An identification is given to the items below:
- access doors for the maintenance,
- service doors,
- fairings,
- removable access panels of the radio rack,
- removable floor panels,
- removable partition panels,
- removable ceiling panels,
- removable sidewall panels.

NOTE: Electrical panels are not included here since a special rule applies to them.

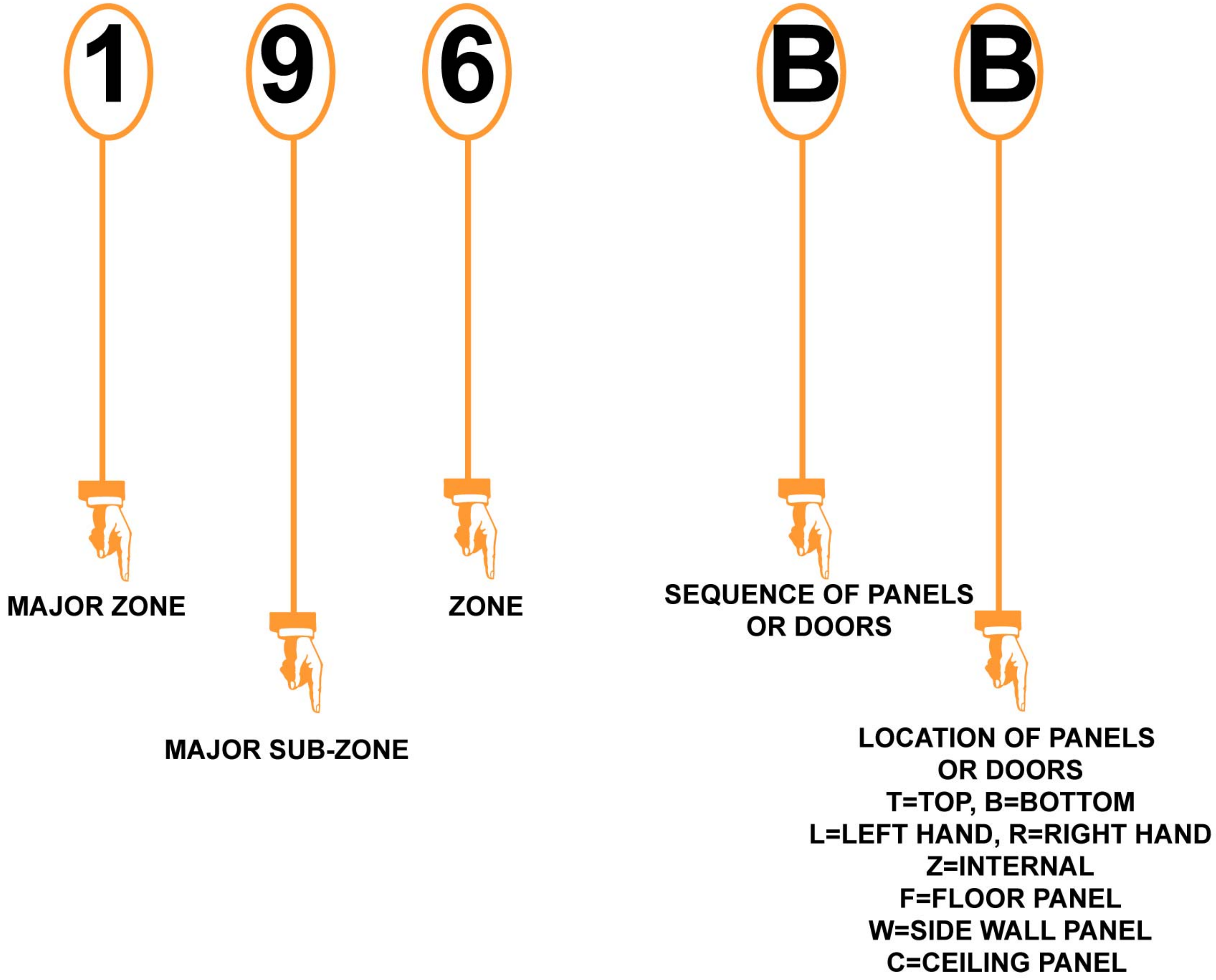
The first three digits identify the smallest zone in which the door/panel is found.
The first letter or identifier shows the position of the access doors and panels in a logical sequence:
- forward to aft, for the fuselage,
- inboard to outboard, for the wing and horizontal stabilizer,
- bottom to top, for the vertical stabilizer.

The second letter or locator identifies the access door or panel in its relation to the aircraft::
T = TOP (upper surface),
B = Bottom (lower surface),
L = Left hand,
R = Right hand,
Z = Internal,
F = Floor panel,
W = Sidewall panel,
C = Ceiling panel.

When all the letters of the alphabet have been used up for the first letter (identifier), the sequence starts again with letter A and the other letters below are used for the locator:
U = Top (upper surface),
D = Bottom (lower surface),
P = Left hand,
S = Right hand,
G = Floor panel,
X = Sidewall panel,
Y = Ceiling panel.

NOTE: The letters I and O are not used.

Special Identification Rules:
Passenger/crew doors, cargo doors, landing gear doors: only the zone number is used since each is a zone in itself.
Blow-out doors and vents have no identification number.
Access doors and panels in the fuselage centerline have the identification of the LH zone.
Similar doors on opposite sides of the aircraft have the same letter identifier even though zone numbers will be different.
A door on a zone limit is identified with the number of the zone from which it is removed.
If an access door or panel is in more than one zone, the lowest zone number applicable is used.



ACCESS PANELS

GCL13151 - G43T4M0 - FM05P2000000003

00 ZONE AND STATION PRESENTATION (1)

PLACARDS AND MARKINGS

The ATA 11 gives the location and illustrations of the placards, stencils and markings on the Aircraft (internal or external side).
The PLACARDS AND MARKINGS on the Aircraft give the data and instructions related to safety and maintenance.
Some of these placards and markings are necessary to obey the regulation used for the Airbus aircraft type certification (CS 25). These are identified by a flag note as follows: NOTE (1) REQUIRED BY REGULATION.

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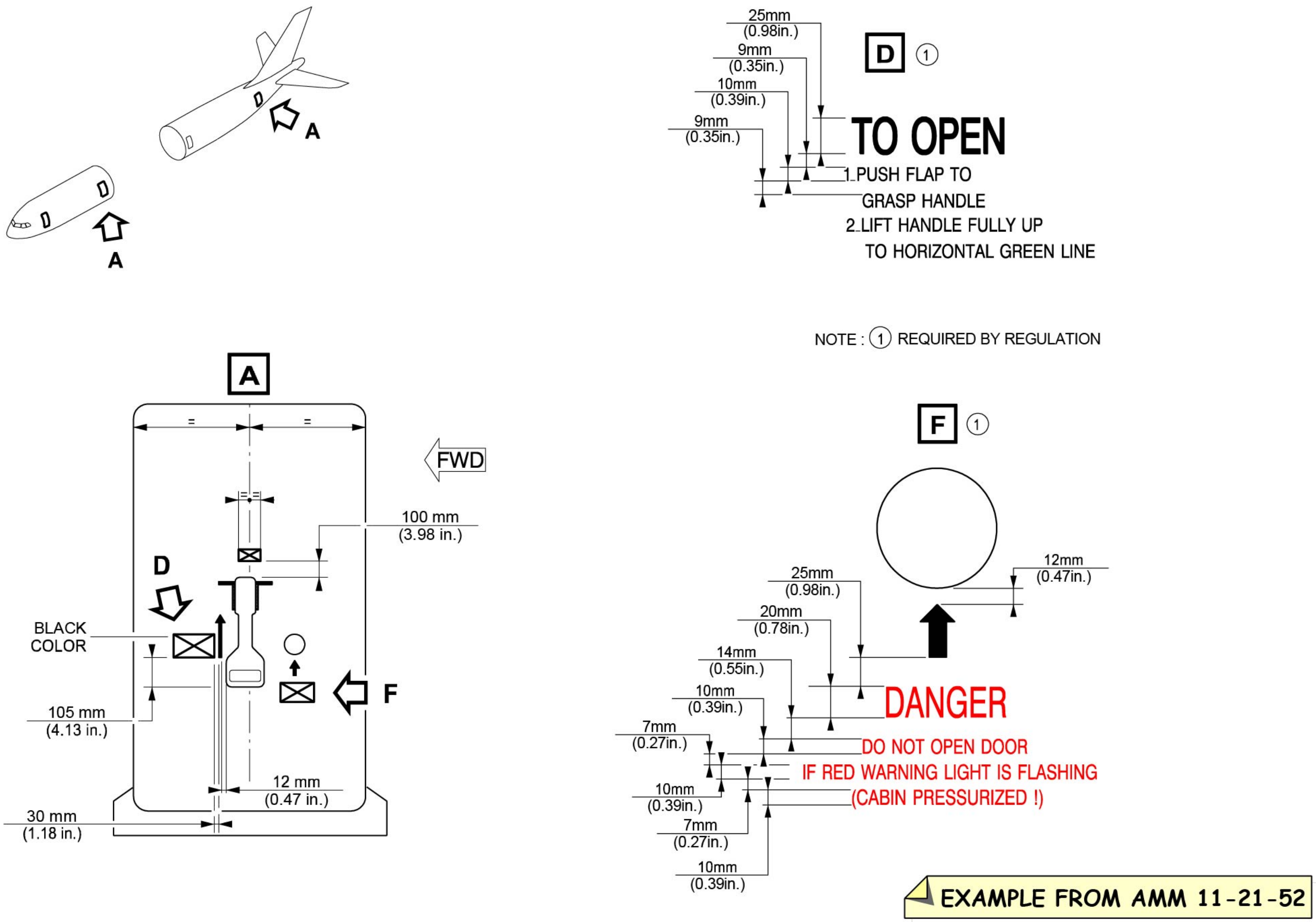

PLACARDS AND MARKINGS

GCL13151 - G43T4M0 - FM05P2000000003

00 A/C HANDLING (1)

MAXIMUM TAKEOFF WEIGHT

The chart shows the Maximum Takeoff Weight (MTOW) for Long Range family aircraft.

NOTE: For A340-600, an option allows to increase the MTOW until 380000 KGS (837757 LBS)

GCL13151 - G43T4M0 - FM01D1000000001

MODEL	MTOW (KGS)	MTOW (LBS)
A330-200	192000 TO 233000	423285 TO 513675
A330-300	184000 TO 233000	405650 TO 513675
A340-300	253500 TO 275000	558866 TO 606270
A340-500	368000 TO 372000	811300 TO 845047
A340-600	365000 TO 368000	804686 TO 811300
A340-600	368000 TO 380000	811300 TO 837757

OPTION

GCL13151 - G43T4M0 - FM01D1000000001

MAXIMUM TAKEOFF WEIGHT

00 A/C HANDLING (1)

SERVICE POINTS

The picture shows the different service points for the A330 and the A340.

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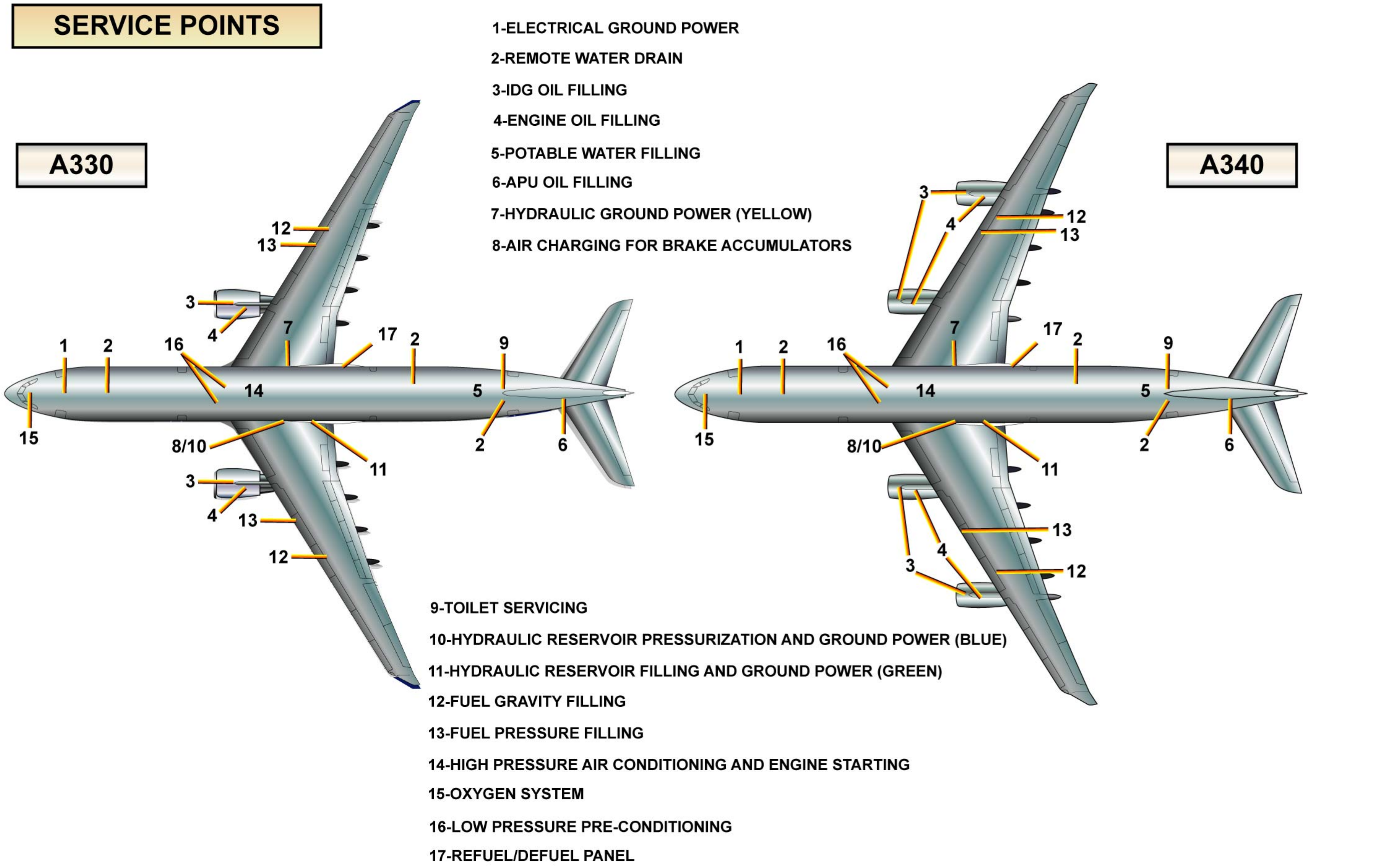


SERVICE POINTS

GCL13151 - G43T4M0 - FM01D1000000001

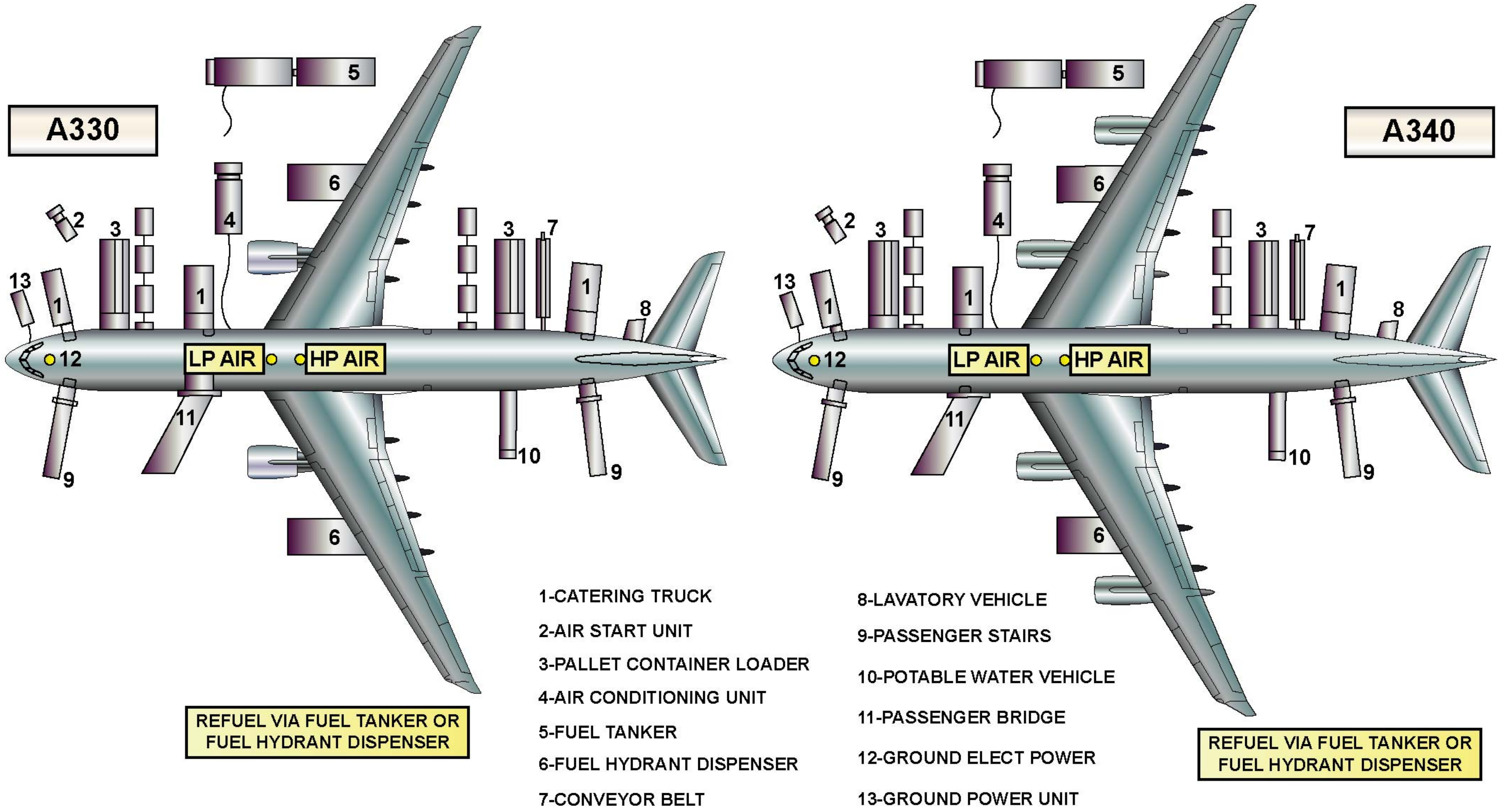
00 A/C HANDLING (1)

SERVICE ARRANGEMENTS

The positioning of some items may vary with local arrangements. The picture shows the different service arrangements for the A330 and the A340.

GCL13151 - G43T4M0 - FM01D1000000001

SERVICE ARRANGEMENTS

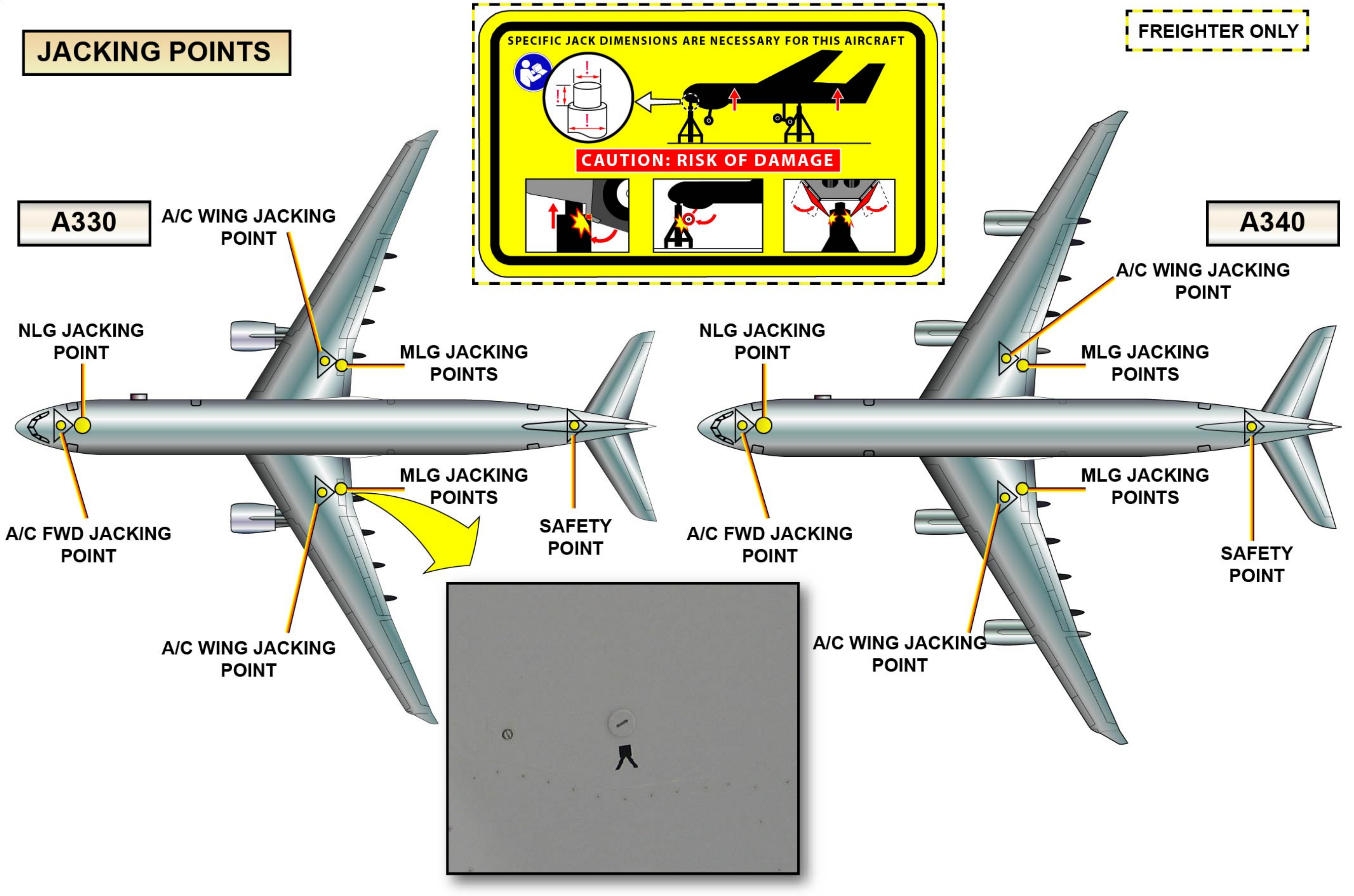


SERVICE ARRANGEMENTS

00 A/C HANDLING (1)

JACKING

The three jacks have to be operated together. As soon as the jacking operation is finished, position the tail safety stay to stabilize the aircraft.
The three jacking points, when equipped with jacking pads, are used to lift the aircraft. The forward jacking point is located forward of the Nose Landing Gear (NLG). The wing jacking points are located outboard of the Main Landing Gear (MLG). You can lift the aircraft at the forward jacking point only, with the main wheels on the ground. A tail safety stay can be positioned at the rear of the aircraft after jacking to stabilize the aircraft.
The landing gear has jacking points:
- 2 jacking points located on each MLG,
- 1 jacking point located on the NLG.
The open air jacking operation is limited if the wind velocity exceeds permissible values which depend on aircraft gross weight and center of gravity position. In any condition, the aircraft must be pointing upwind.



JACKING

GCL13151 - G43T4M0 - FM01D1000000001

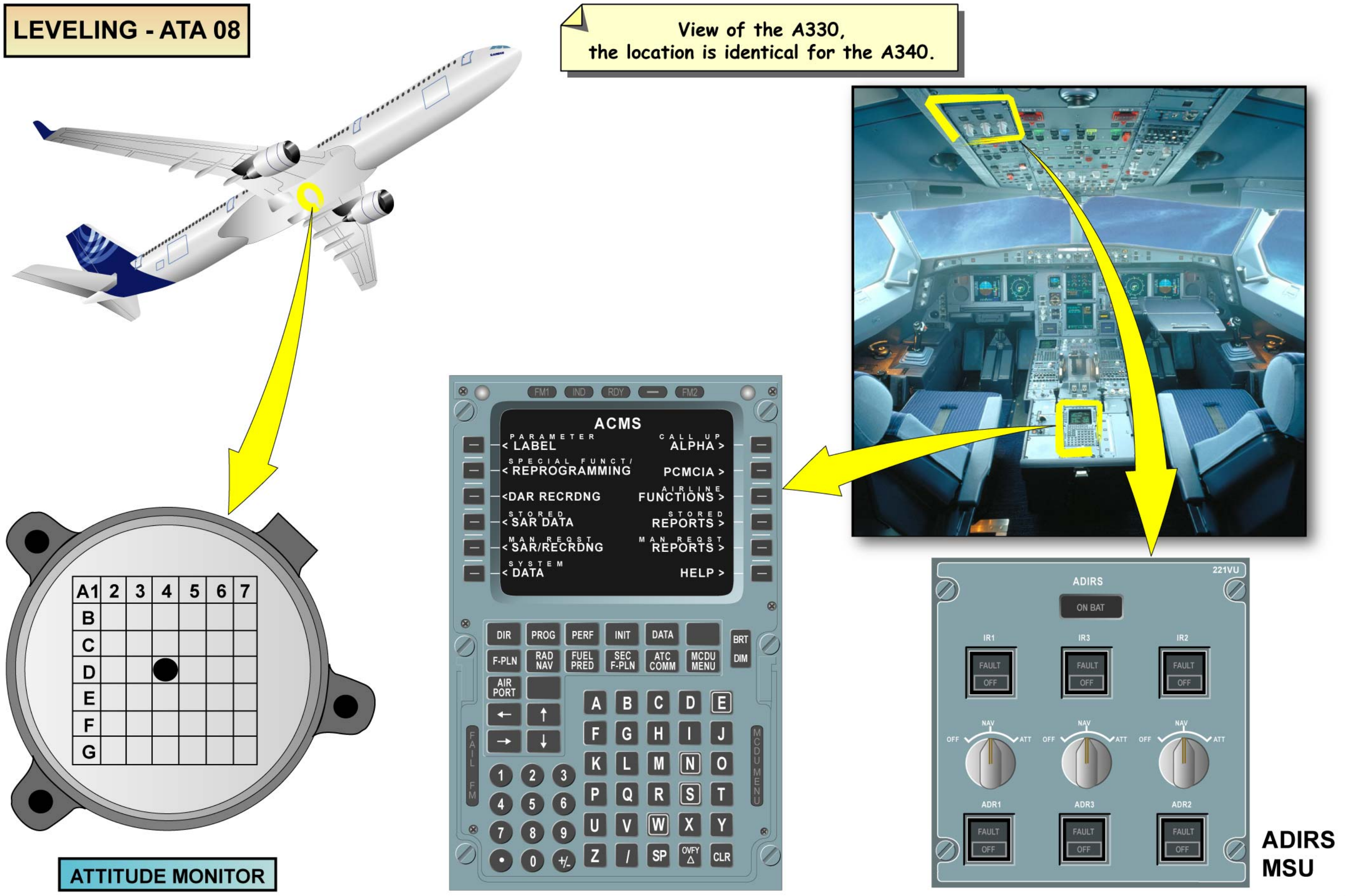
00 A/C HANDLING (1)

LEVELING AND WEIGHING

Different methods of leveling and weighing of the aircraft are possible.

QUICK LEVELING

There are two main procedures to level the aircraft:
- quick leveling with Air Data/Inertial Reference System (ADIRS),
- quick leveling with the attitude monitor, located in the belly fairing.



LEVELING AND WEIGHING - QUICK LEVELING

GCL13151 - G43T4M0 - FM01D1000000001

00 A/C HANDLING (1)

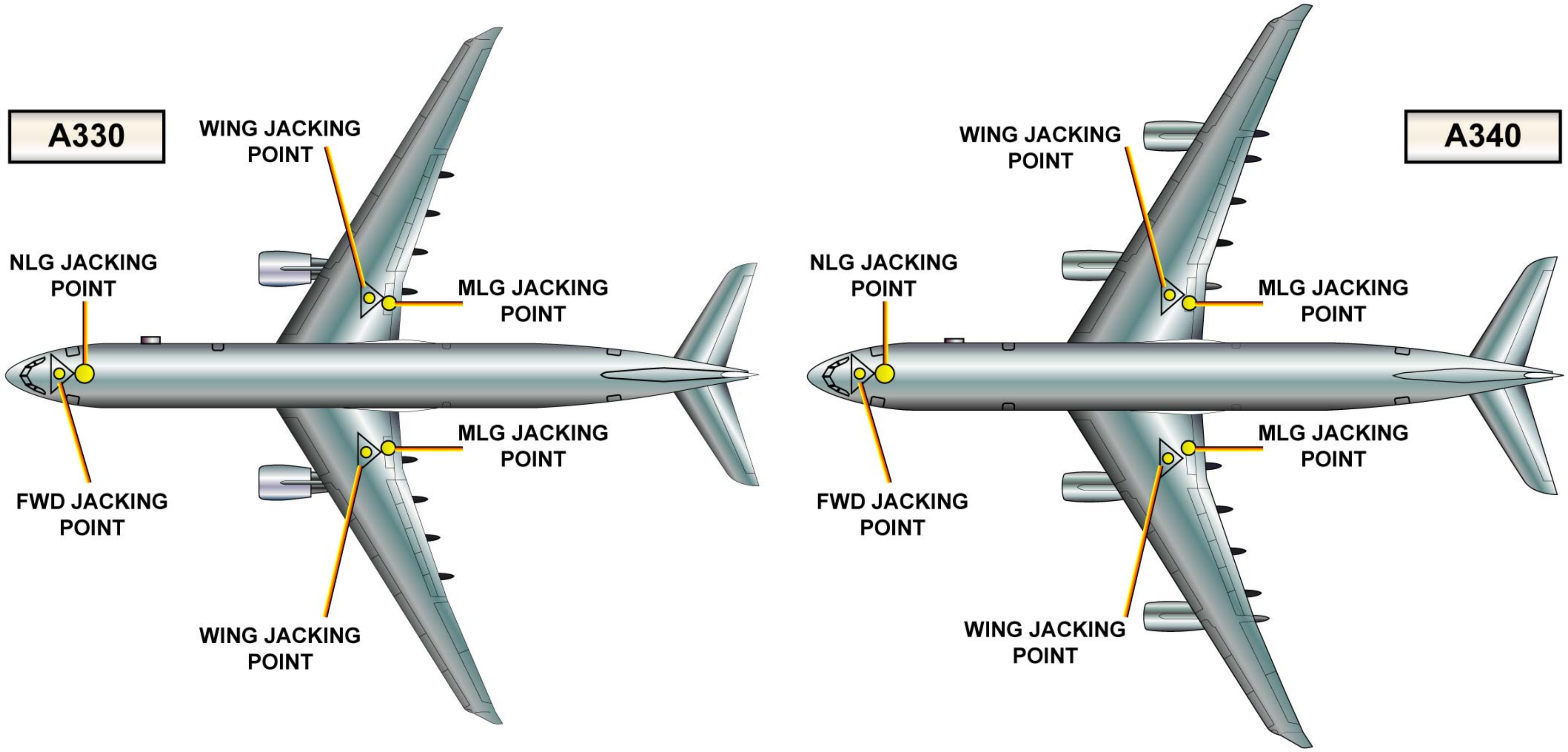
LEVELING AND WEIGHING (continued)

WEIGHING

You can weigh the aircraft with:
- the aircraft on jacks,
- the aircraft on its wheels,
- the aircraft on landing gear jacks.

Load cells on each jack or platform scales are used for weighing.

WEIGHING - ATA 08



LEVELING AND WEIGHING - WEIGHING

00 A/C HANDLING (1)

TOWING AND TAXIING

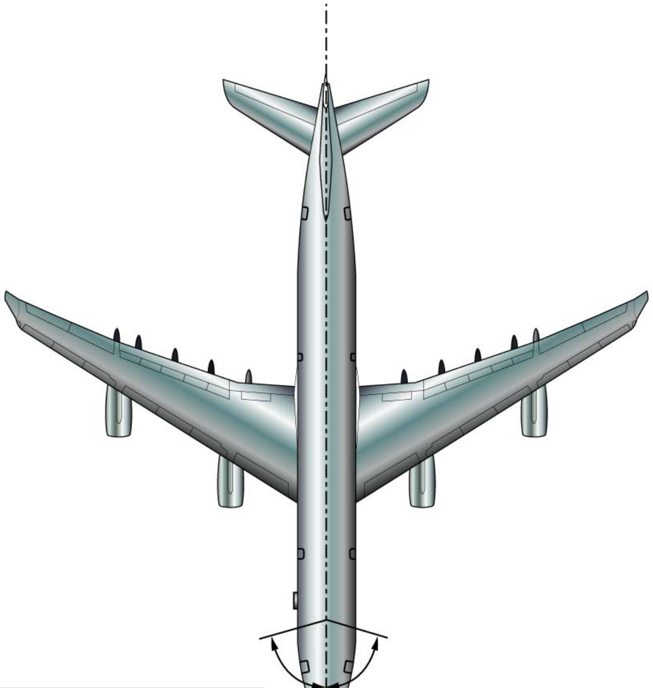
This topic gives information related to the towing and taxiing of the aircraft.
Make sure that each person in the aircraft is in a seat and the seat belt is fastened during towing and taxiing operations (low-speed operations included).

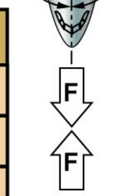
TOWING

Before towing the aircraft:
- make sure that the safety devices are installed on the landing gears,
- make sure that the dimension 'H' of the Nose Landing Gear (NLG) is never greater than 310 mm (407 mm for A340-600),
- on the nose wheel steering deactivation electrical box, set the ground towing control lever to the towing position and install the pin.

NOTE: Towing the aircraft is possible either with the NLG front device or the NLG aft device.

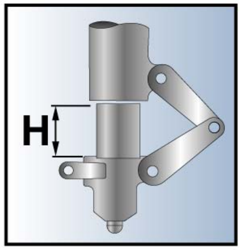
TOWING WITH THE NOSE LANDING GEAR - ATA 09



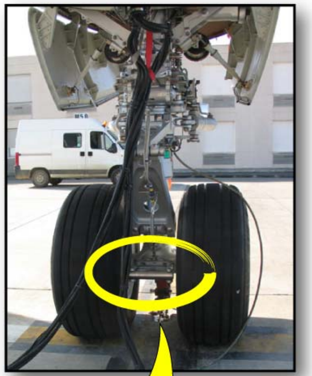


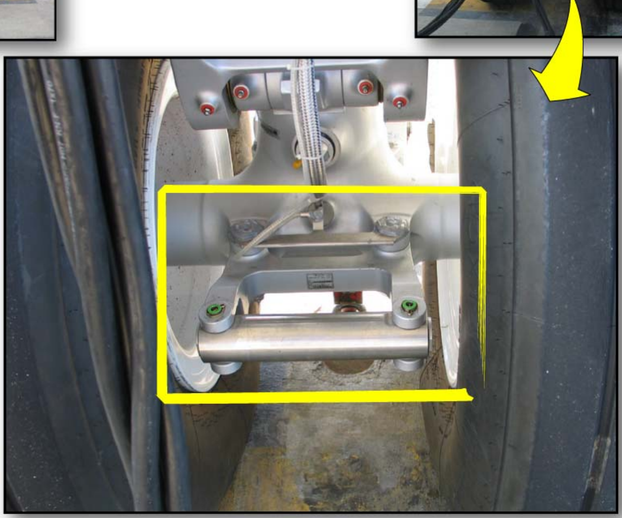
TOWING FORCES F	
BREAKAWAY	6% MTW
ROLLING	3% MTW
BREAKAWAY ON SLOPE	6% MTW +1% MTW PER 1% SLOPE
ROLLING ON SLOPE	3% MTW +1% MTW PER 1% SLOPE

NLG FRONT VIEW



NLG REAR VIEW





TOWING DEVICE

EACH PERSON IN THE AIRCRAFT IS IN A SEAT AND SEAT BELTS ARE FASTENED DURING TOWING AND TAXIING OPERATIONS (LOW-SPEED OPERATIONS INCLUDED).

TOWING AND TAXIING - TOWING

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00 A/C HANDLING (1)

TOWING AND TAXIING (continued)

TAXIING

When the aircraft moves with its power on the ground, the AMM safety precautions must be taken into account.

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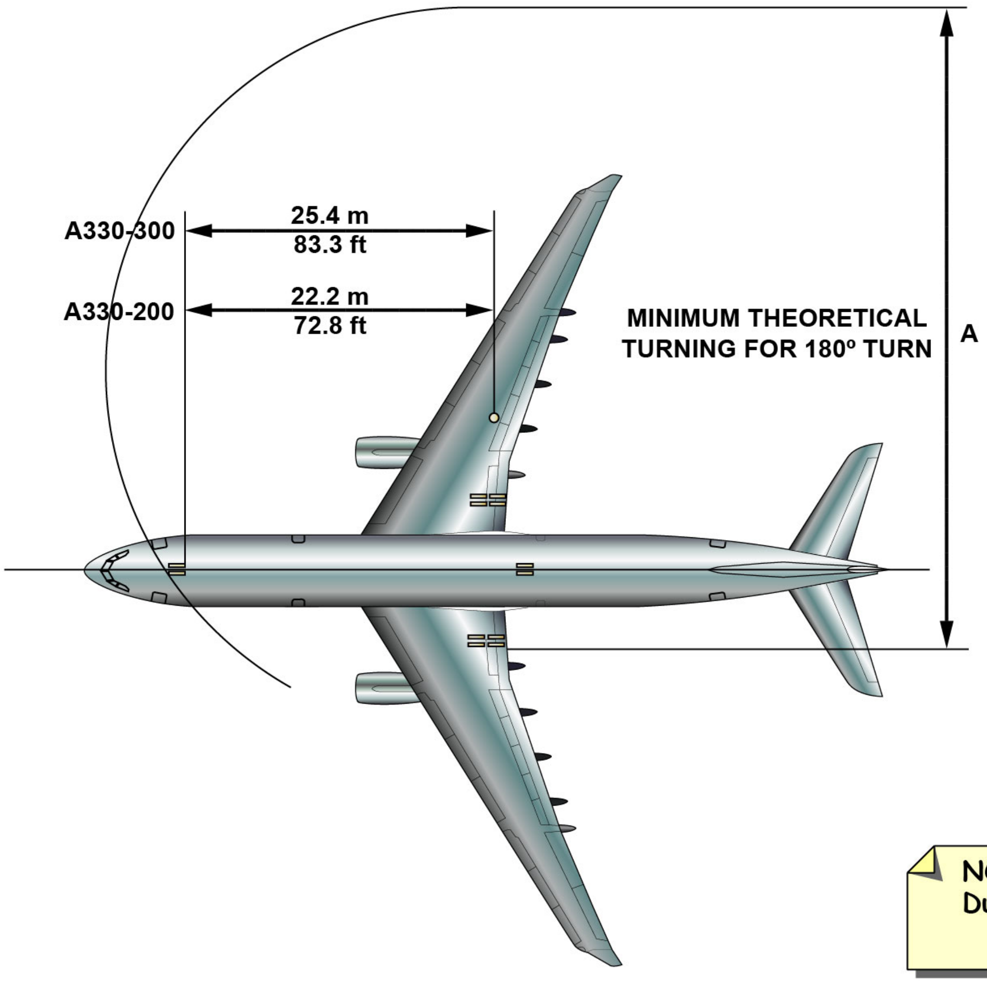
A330 MINIMUM TURNING RADIUS - ATA 09

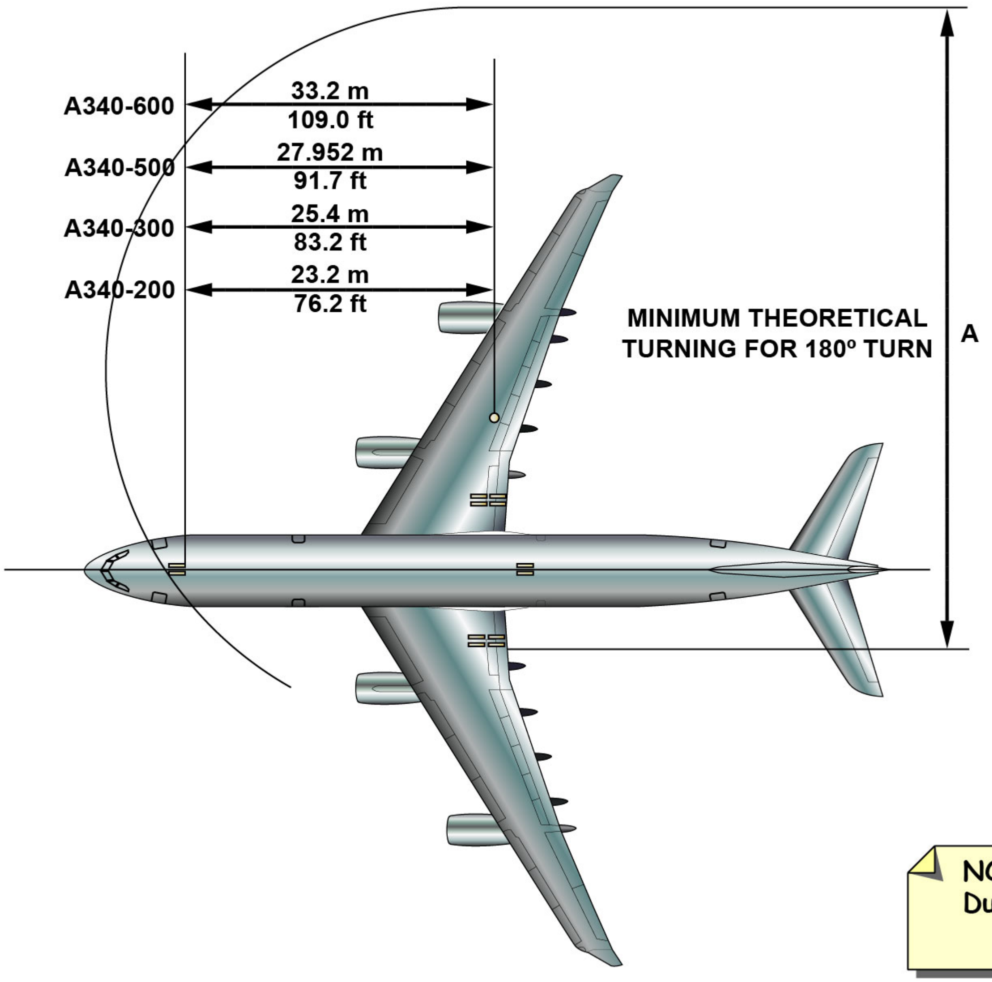


	A330 -200	A330 -300
	TURN	TURN
A	143 ft 43.6 m	158.9 ft 48.4 m

NOTE:
During turn: Apply symetric thrust, no braking input
Slow continous turning

TOWING AND TAXIING - TAXIING

A340-200/ A340-300/ A340-500/ A340-600 MINIMUM TURNING RADIUS - ATA 09



	A340 -200	A340 -300	A340 -500	A340 -600
	TURN	TURN	TURN	TURN
A	150.2 ft 45.8 m	162.4 ft 49.5 m	165.8 ft 50.5 m	185.9 ft 56.7 m

NOTE:
During turn: Apply symetric thrust, no braking input
Slow continous turning

TOWING AND TAXIING - TAXIING

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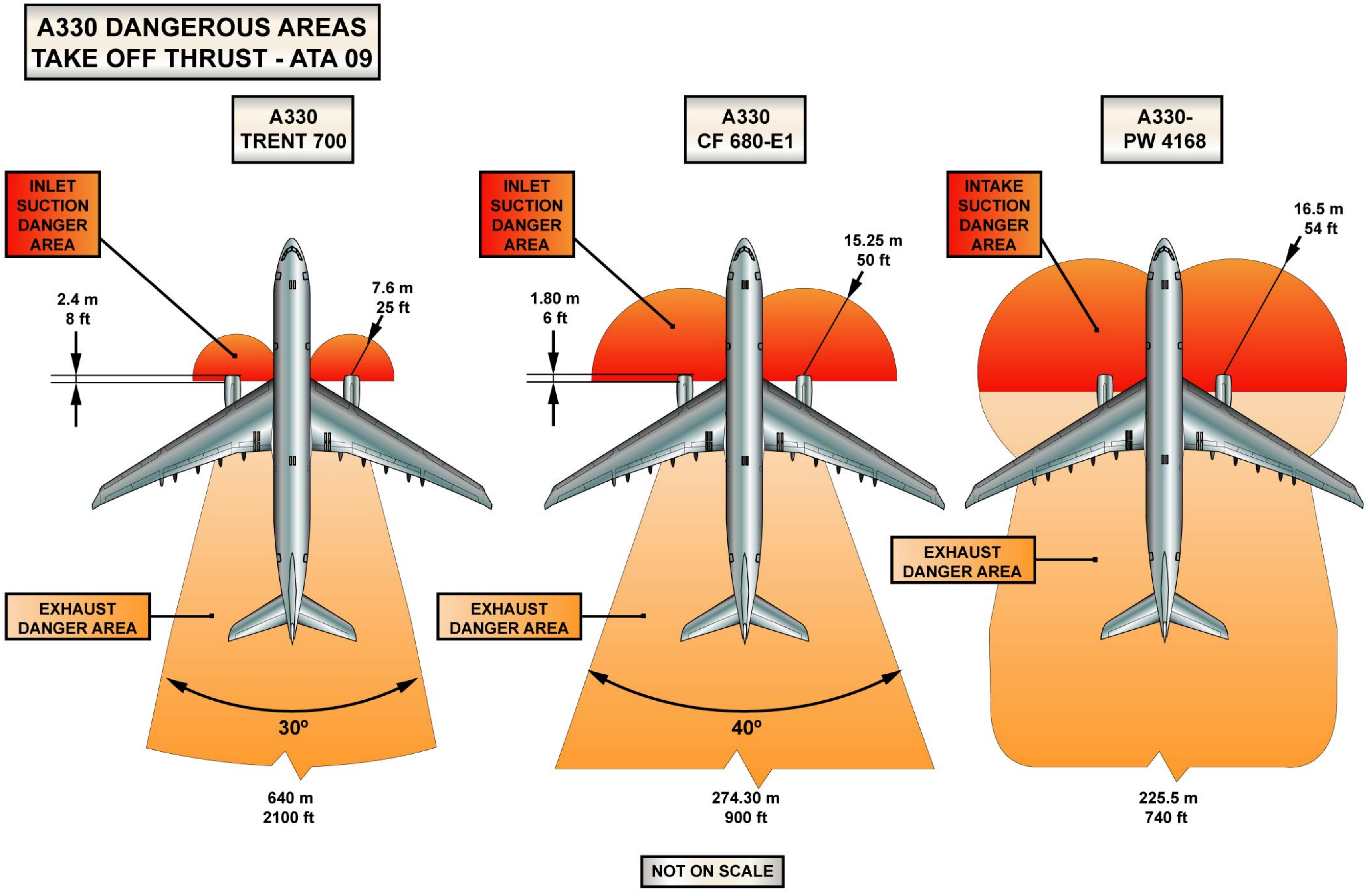
00 A/C HANDLING (1)

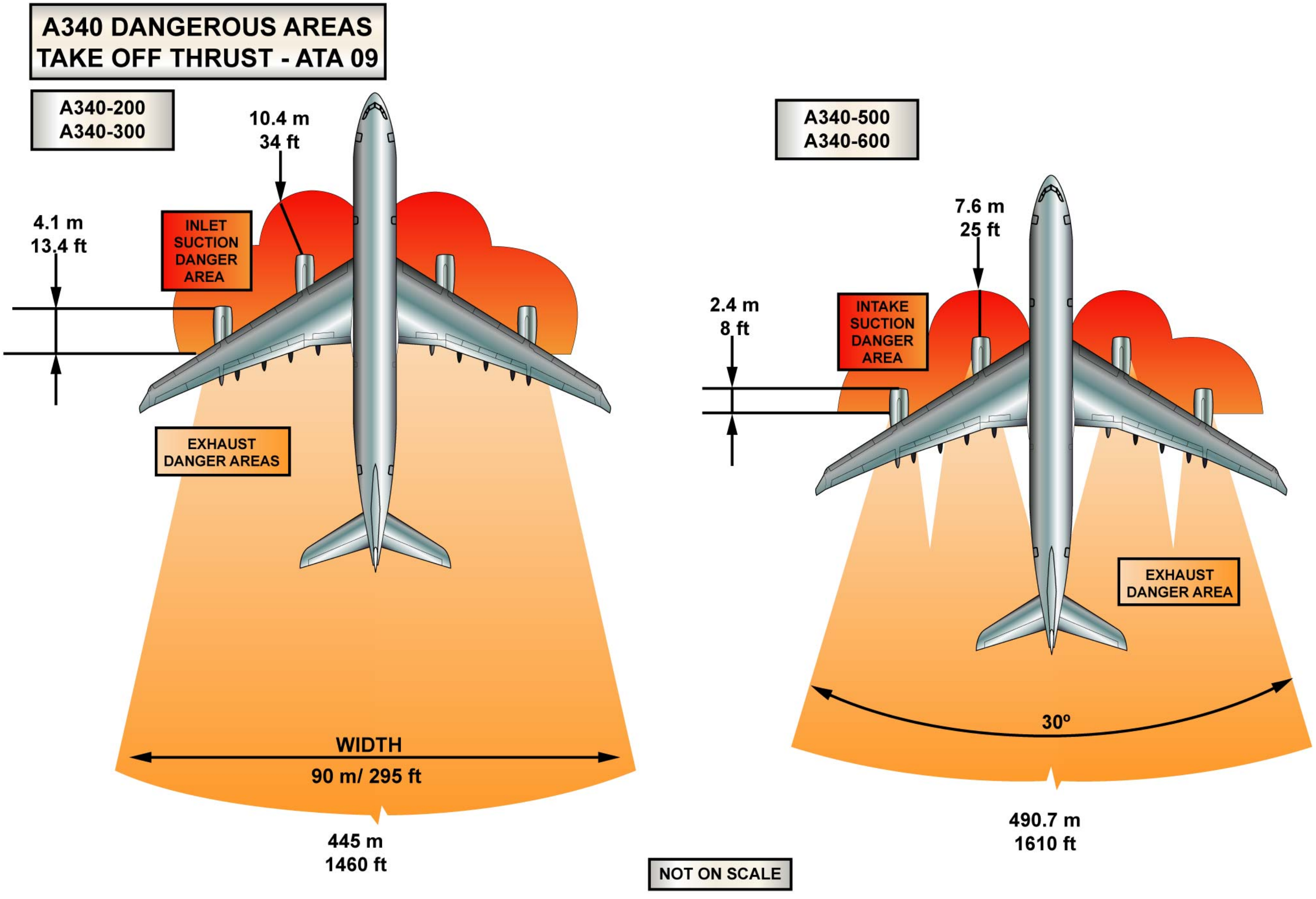
ENGINES DANGEROUS AREAS

- Dangerous engine areas: Safety precautions must be taken to avoid danger from engine suction and exhaust areas.
- Depending on the distance from the running engine and on its power setting, it is necessary to wear ear protection and to respect the maximum time exposure.



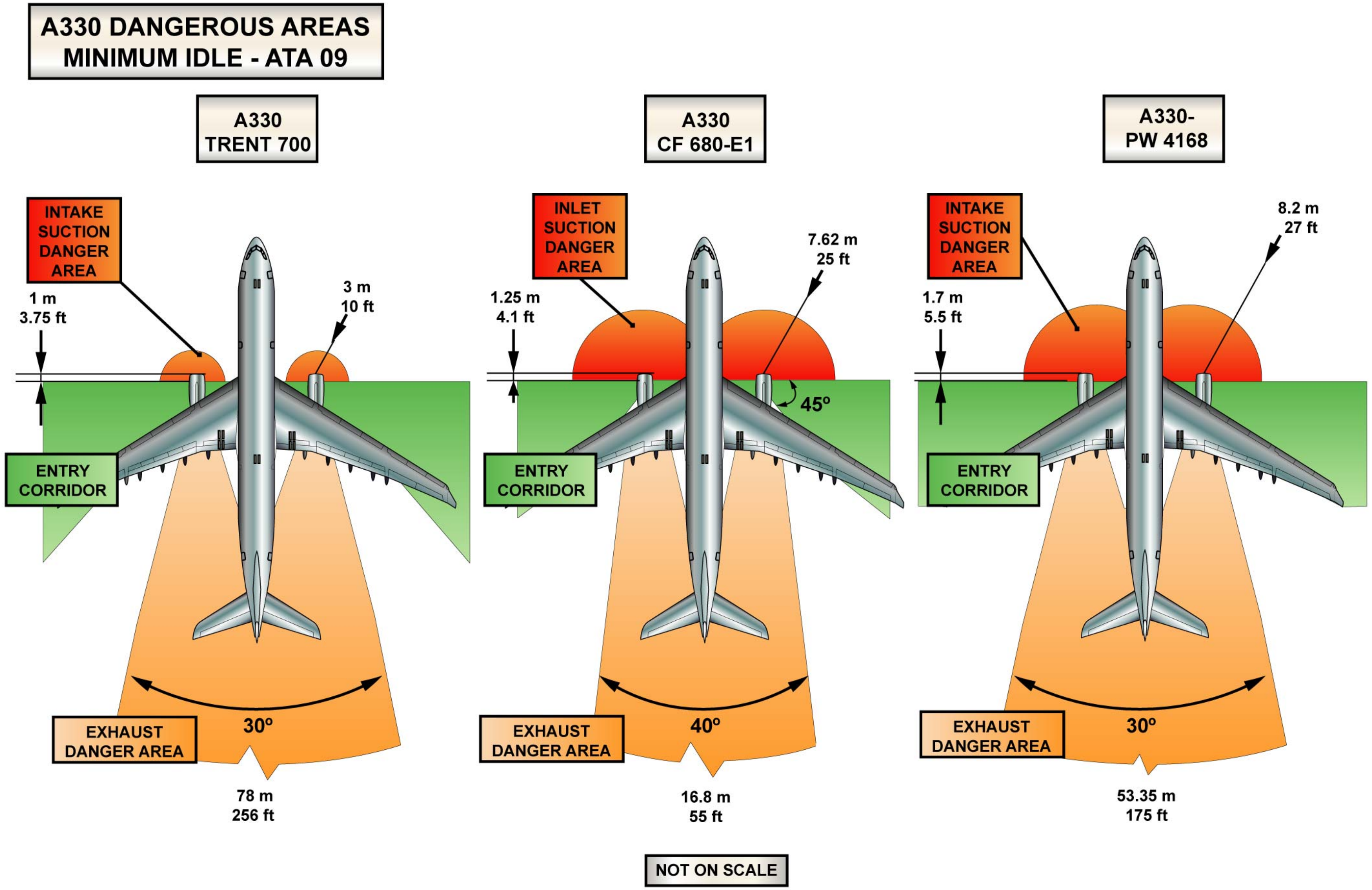
ENGINES DANGEROUS AREAS

GCL13151 - G43T4M0 - FM01D1000000001



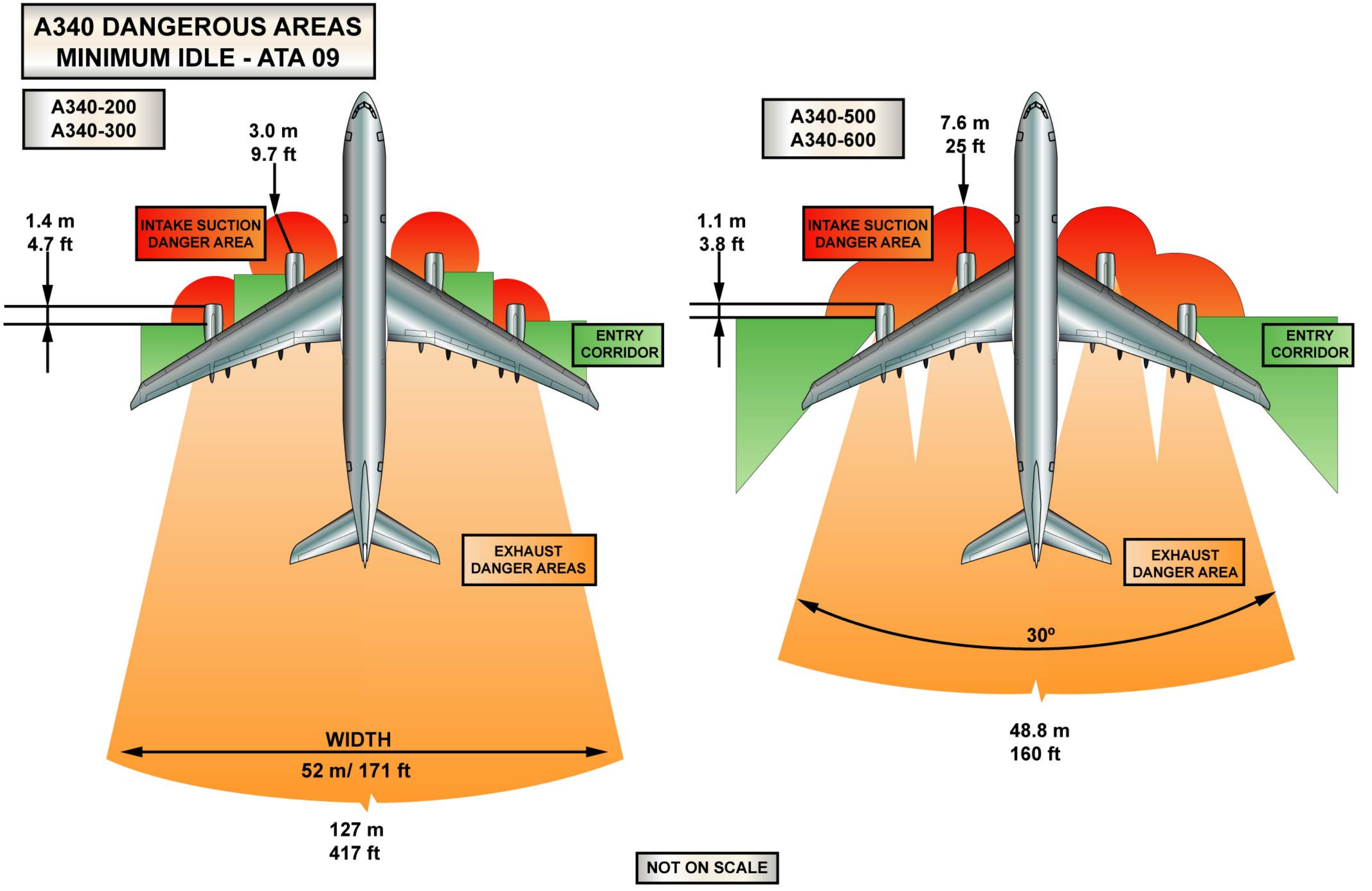
ENGINES DANGEROUS AREAS

GCL13151 - G43T4M0 - FM01D1000000001



ENGINES DANGEROUS AREAS

GCL13151 - G43T4M0 - FM01D1000000001



ENGINES DANGEROUS AREAS

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00 A/C HANDLING (1)

PARKING AND MOORING

This topic covers the parking of the aircraft and the mooring of the landing gear.

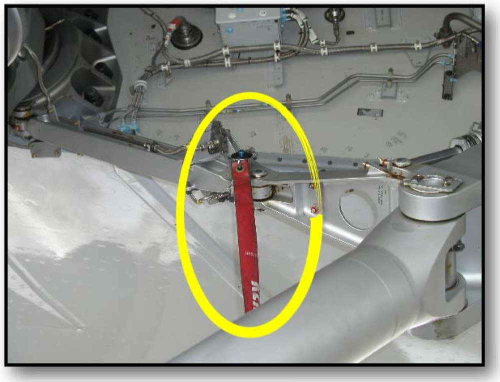
PARKING PROCEDURE

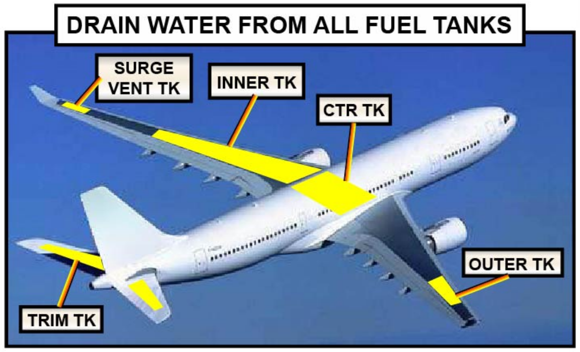
To park the aircraft follow these tasks:
- If necessary, do the cold weather procedure and clean the aircraft.
- Park the aircraft on a flat surface. Make sure that the wheels of the nose landing gear are on the aircraft axis and the aircraft points into the wind.
- Install the safety devices on the landing gears.
- Make sure that the flight control surfaces are retracted and THS at 2 degrees
- Put the wheel chocks in position:
- for the NLG, in front of and behind the wheels,
- for the MLG, in front of and behind wheels.
- Ground the aircraft.

If necessary refuel the fuel tanks to 30% minimum of their total capacity.
- Drain water from all the fuel tanks.
- Drain potable water and lavatories.
- Open the cockpit and cabin window shades. Make sure that the sliding windows are closed.
- Installation of the Protection Equipment: Protect all the probes, the engines and the APU with adapted protection equipment.
- On the overhead panel 225VU, on the CABIN PRESS section, push the DITCHING pushbutton switch.

PARKING PROCEDURE - ATA 10

- In cold weather conditions, do the cold weather procedures.
- Clean the aircraft if necessary
- Park the aircraft on a flat surface
- Install the landing gears safety devices
- Flight control surfaces retracted
- THS set to two degrees up
- Put the wheel chocks in position
- Ground the aircraft
- Refuel tanks to a minimum of 30%
- Drain water from all fuel tanks
- Drain potable water and lavatories
- Open all window shades
- Close cockpit sliding windows
- Install protection equipment (probes, engines, APU)





AIRCRAFT MAINTENANCE CONFIGURATION:
- On the panel 225VU, push the ditching pushbutton switch
- De-energize the aircraft electrical circuits

PARKING AND MOORING - PARKING PROCEDURE

00 A/C HANDLING (1)

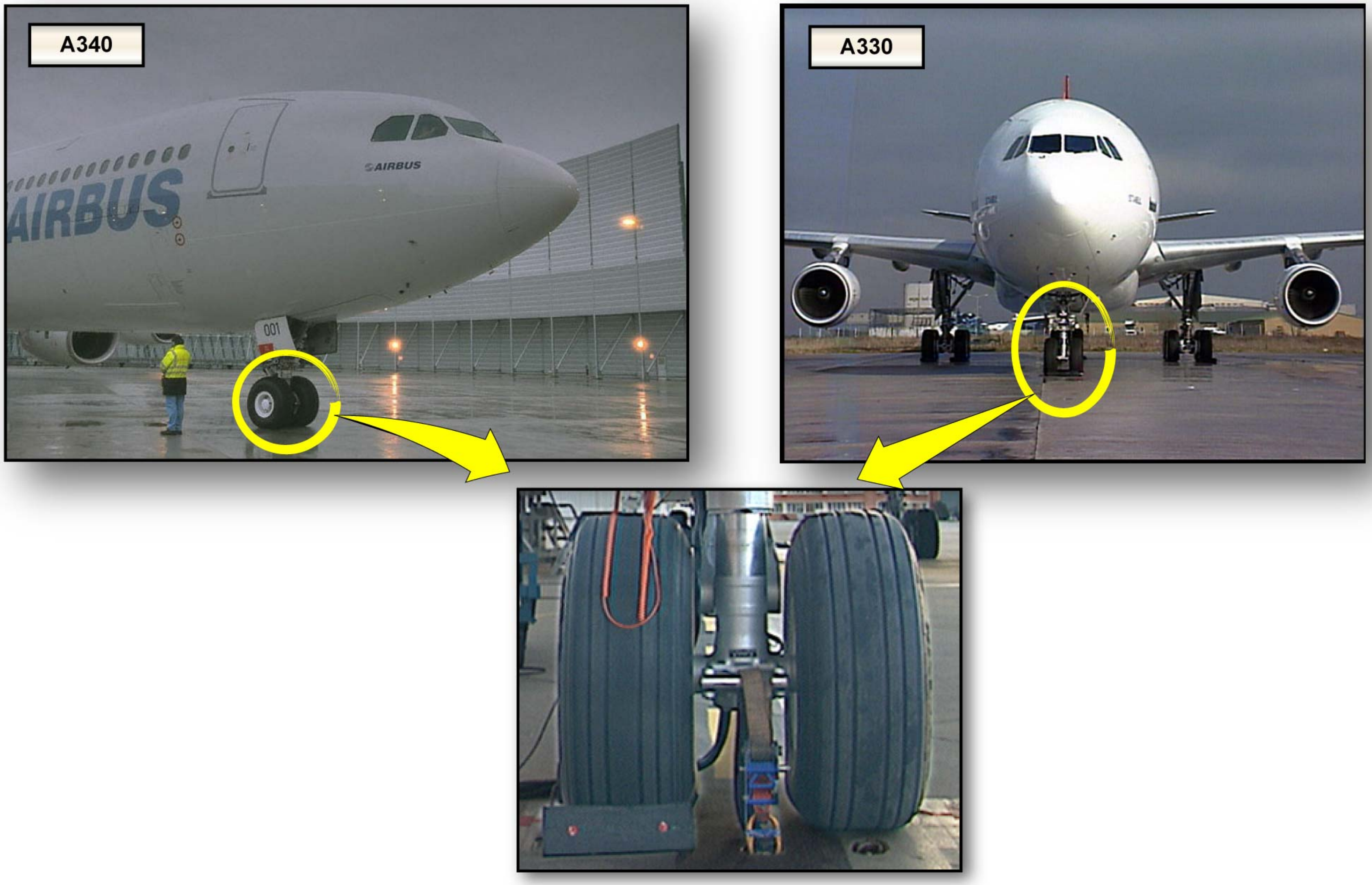
PARKING AND MOORING (continued)

MOORING

The function of mooring is to prevent movement of the aircraft in high winds. The limits of aircraft stability in relation to the wind speed are given in the Aircraft Maintenance Manual (AMM) chapter 05-57-00. Long Range aircraft are moored at the NLG. Make sure that the wheels of the NLG are on the aircraft axis and the aircraft points into the wind. Install wheel chocks in position for NLG and MLG.

GCL13151 - G43T4M0 - FM01D1000000001

AIRCRAFT MOORING - ATA 10



PARKING AND MOORING - MOORING

00 A/C HANDLING (1)

GROUND SUPPORT EQUIPMENT AND TOOLS

The World Airlines Technical Operations Glossary (WATOG) definition of Ground Support Equipment (GSE) is:
equipment required on the ground to support the operation and maintenance of the aircraft and all its airborne equipment.
Airbus divides GSE into two categories:
- tools,
- standard GSE.

Tools can be split into two categories:
- standard tools,
- specific tools.

STANDARD TOOLS

Standard tools are hand tools such as spanners, sockets, gauges, torque wrenches...
The specifications (size, range, capacity, accuracy...) are given in the related AMM task to let operators use the tool brand of their choice.
Standard tools for Aircraft Maintenance are all in US units. Metric tools maybe required for maintenance.

GROUND SUPPORT EQUIPMENT AND TOOLS - STANDARD TOOLS

GROUND SUPPORT EQUIPMENT AND TOOLS (continued)

SPECIFIC TOOLS

Specific tools are tools designed by Airbus or by its vendors to carry out given maintenance tasks on the aircraft or one of its components. All maintenance tools for "on - aircraft" maintenance such as the AMM, Trouble Shooting Manual (TSM)... and for "off - aircraft" maintenance such as the Component Maintenance Manual (CMM) are found in the Support Equipment Summary (SES) document. The SES covers all Airbus aircraft types and all related documentation. If a tool does not appear in the SES it is not a tool for Airbus aircraft or equipment. All specific tools called up for "on - aircraft" maintenance in the AMM and the TSM are illustrated in the Tool Equipment Manual (TEM).

GROUND SUPPORT EQUIPMENT AND TOOLS - SPECIFIC TOOLS

00 A/C HANDLING (1)

GROUND SUPPORT EQUIPMENT AND TOOLS (continued)

STANDARD GSE

Airbus considers as standard GSE any GSE which is not designed for a specific aircraft type, but it can/could be used on a number of different aircraft types. Standard GSE includes, but is not limited: tow bars, axle/wheel change jacks, tripod maintenance jacks, access platforms, hydraulic ground carts, electrical power units, etc...

MAIN LANDING GEAR FLAT TYRES AXLE JACK

HYDRAULIC AXLE JACK

TRIPOD JACKS

TROLLEY JACK

SET OF FLYAWAY AXLE JACKS

TOW BAR AXLE

GROUND SUPPORT EQUIPMENT AND TOOLS - STANDARD GSE

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